# CCD-TR42/TR70/TR72/TR80/TR82/ TR400/TR430/TR550/TR750

## RMT-708

# SERVICE MANUAL

US Model
*CCD-TR70/TR72/TR80/TR82/TR400*

Canadian Model
*CCD-TR42/TR70/TR80/TR82/TR400*

E Model
*CCD-TR430/TR550/TR750*

Tourist Model
*CCD-TR550/TR750*

SONY
12x
Video 8
AF
CCD

**Photo : CCD-TR42**

**Handycam**

A MECHANISM

We will inform you of the electrical adjustment of the color view finder in the future.

In this service manual, board names will be different for each model and indicated as follows.

| | TR42/TR70/TR82/TR550 | TR72/TR80/TR400/TR430/TR750 |
|---|---|---|
| VC BOARD | VC-145 BOARD | VC-138 BOARD |
| VS BOARD | VS-112 BOARD | VS-104 BOARD |
| DD BOARD | DD-66 BOARD | DD-60 BOARD |

**For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ" (9-973-199-11).**

## SPECIFICATIONS

### System

**Video recording system**: Two rotary heads, Helical scanning, FM system
**Audio recording system**: Rotary heads, FM system
**Video signal**: NTSC color, EIA standards
**Usable cassette**: 8 mm video format cassette (standard 8 mm)
**Tape speed**: <SP mode> Approx. 19/32 inches (1.43 cm)/second, <LP mode> Approx. 5/16 inches (0.72 cm)/second (playback only)
**Recording time**: SP mode 2 hours (P6-120)
**Playback time**: <SP mode> 2 hours (P6-120), <LP mode> 4 hours (P6-120)
**Fastforward/rewind time**: Approx. 6 min. 30 sec. (P6-120)
**Image devide**: CCD (Charge Coupled Device)
**Viewfinder**: See the table on the next page.
**Lens**: See the table on the next page.
**Color temperature**: Auto
**Minimum illumination**: See the table on the next page.
**Illumination range**: See the table on the next page.
**Recommended illumination**: More than 100 lx

### Output connector

**Video output**: Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
**Audio output**: See the table on the next page.
**RFU DC OUT**: Special minijack, DC 5 V
**Headphones/Earphone jack**: See the table on the next page.
**LANC jack**: Stereo mini-minijack (ø 2.5 mm)
**MIC jack**: See the table on the next page.

### General

**Power requirements**: On battery mounting surface 6.0 V (battery pack), 7.5 V (AC power adaptor)
**Average power consumption**: See the table on the next page.
**Installation**: Vertically, Horizontally
**Operating temperature**: 32°F to 104°F (0°C to 40°C)
**Storage temperature**: –4°F to +140°F (–20°C to +60°C)
**Dimensions**: See the table on the next page.
**Mass**: See the table on the next page.
**Microphone**: See the table on the next page.

— Continued on next page —

# 8 VIDEO CAMERA RECORDER

CCD-TR42/TR70/TR72/TR80/TR82/TR430/TR550

# Hi8 VIDEO CAMERA RECORDER

CCD-TR400/TR750

MICROFILM

SONY®

| Model | CCD-TR42 | CCD-TR70 | CCD-TR72 | CCD-TR80 | CCD-TR82 | Notes |
|---|---|---|---|---|---|---|
| Viewfinder | B/W | Color | B/W | Color | B/W | Electronic viewfinder |
| Lens | 12 x | 10 x | 12 x | | | Combined power zoom lens, Filter diameter 1 1/2 inches (37 mm), TTL autofocus system inner focus wide macro system |
| Focal distance f = | 7/32 – 2 5/8 in (5.4 – 64.8 mm) | 7/32 – 2 1/4 in (5.4 – 54 mm) | 7/32 – 2 5/8 in (5.4 – 64.8 mm) | | | — |
| | — | | | | 9/32 – 3 1/8 in (6.5 – 78 mm) | at Steady Shot |
| | 1 9/16 – 18 1/2 in (39 – 468 mm) | 1 9/16 – 15 3/8 in (39 – 390 mm) | 1 9/16 – 18 1/2 in (39 – 468 mm) | | 1 7/8 – 22 1/4 in (47 – 564 mm) | When converted into a 35-mm still camera |
| Minimum illuminations | 2 lx | | | | 5 lx | F 1.8 |
| Illumination range | 2 – 100,000 lx | | | | 5 – 100,000 lx | — |
| Audio output | Monaural | | 2: stereo L and R | | Monaural | Phono jack 7.5 dBs, (at output impedance 47 kΩ) impedance less than 2.2 kΩ |
| Headphones/ Earphone jack | Minijack | | Stereo minijack | | Minijack | — |
| MIC jack | Minijack | | Stereo minijack | | Minijack | –66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (ø 3.5 mm) |
| Average power consumption | 4.9 W | 5.2 W | 5.0 W | 5.3 W | 5.4 W | Camera recording, including the viewfinder |
| Dimensions | 4 1/2 x 4 3/8 x 8 1/4 inches (114 x 110 x 207 mm) | | 4 1/2 x 4 3/8 x 8 1/4 inches (114 x 110 x 208 mm) | | 4 1/2 x 4 3/8 x 8 1/4 inches (114 x 110 x 207 mm) | w/h/d |
| Mass | 1 lb 15 oz (890 g) | 1 lb 15 oz (880 g) | 1 lb 15 oz (890 g) | 1 lb 15 oz (880 g) | 1 lb 15 oz (900 g) | Excluding the battery pack, lithium battery, cassette, and shoulder strap |
| Mass | 2 lb 7 oz (1,110 g) | | | | 2 lb 8 oz (1,120 g) | Including the battery pack NP-55, lithium battery CR2025, cassette P6-120, and shoulder strap |
| Microphone | Monaural | | Stereo | | Monaural | Electret condenser microphone |

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## AC power adaptor

**Power requirements:** 110 – 240 V AC*, 50/60 Hz
**Power consumption:** See the table below.
**Output voltage:** See the table below.
**Application:** Sony battery packs NP-55, NP-55H, NP-60D, NP-66H, NP-77H, NP-80/80D
**Operating temperature:** 32°F to 104°F (0°C to 40°C)
**Storage temperature:** –4°F to +140°F (–20°C to +60°C)
**Dimensions:** Approx. 4 1/8 x 1 15/16 x 2 1/2 inches (103 x 49 x 63 mm) including projecting parts and controls
**Mass:** See the table below.

* Canadian Standard Association (CSA) certifies 120 V AC only.

| Model | AC-V25 | AC-V25A | AC-V25B | Notes |
|---|---|---|---|---|
| Power consumption | 15 W | 17 W | 17 W | — |
| Output voltage | 7.5 V, 1 2 A | 7.5 V, 1.5 A | 7.5 V, 1.5 A | DC OUT in operating mode |
| Mass | 10 oz (290 g) | 11 oz (320 g) | 10 oz (290 g) | — |

Design and specifications are subject to change without notice.

Note :
We will inform you of the specification of the CCD-TR400/TR430/TR550/TR750 in the future.

# SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
    - Keep the temperature of the soldering iron around 270°C during repairing.
    - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
    - Be careful not to apply force on the conductor when soldering or unsoldering.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

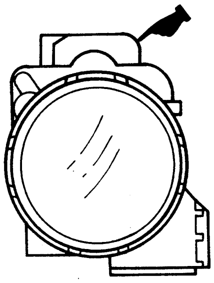
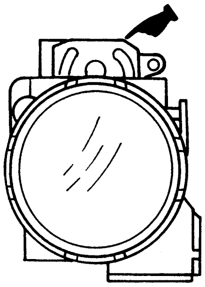
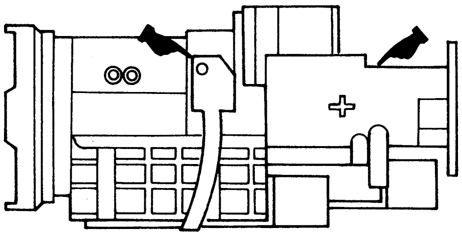
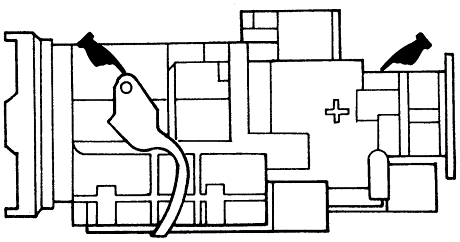
**LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.**

## 【Zoom lens】

This unit employs two types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens

☛ : difference point

| **TYPE I (LSV-140A)** | **TYPE II (VCL-5412WA)** |
|---|---|
| From the front of the lens | From the front of the lens |
|  |  |
| From the right side of the lens (as seen from the front) | From the right side of the lens (as seen from the front) |
|  |  |

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There is the color reproduction standard frame at the back of the book.

# SERVICE NOTE

## [SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

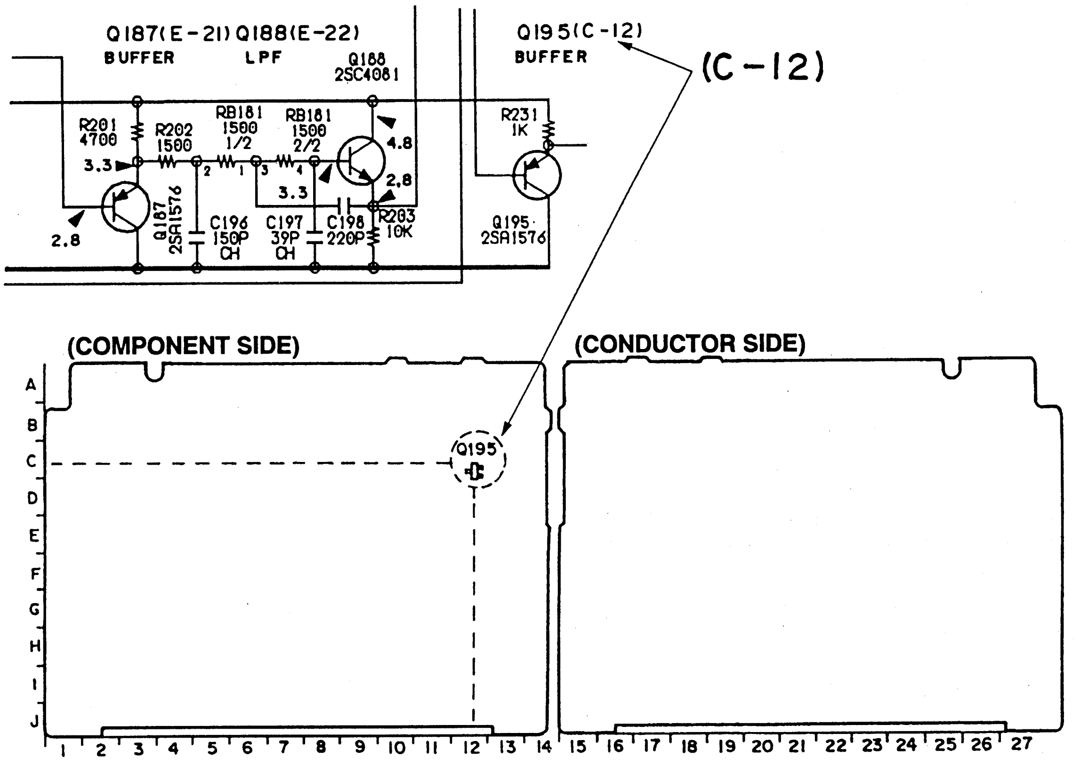
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

## [PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 4–24, 4–35 , 4–36 and 4–78.)
This diagram is useful for repair.

## [SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
4.8
2.8
3.3
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
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8
9
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27

## [HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

### Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [ ✣ ] mark is flashing in the viewfinder at this time, head clogs are occurred.

### Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

### Remedy

**[Cleaning method using a cleaning tape]**

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

# SECTION 1
# GENERAL

This section is extracted from CCD-TR42/TR70/TR72/TR80/TR82 instruction manual.

**Before You Begin**

## Checking Your Model Number

The instructions in this manual are for five models listed below. Before you start reading and operating, check your model number by looking at the bottom of your camcorder. The CCD-TR42 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR82".
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.

### Types of Differences

| Model Number | Audio | | Viewfinder | | Steady Shot | Zoom (X) |
|---|---|---|---|---|---|---|
| | Monaural | Stereo | B/W | Color | | |
| CCD-TR42 | ○ | | ○ | | | 12 |
| CCD-TR70 | ○ | | | ○ | | 10 |
| CCD-TR72 | | ○ | ○ | | | 12 |
| CCD-TR80 | | ○ | | ○ | | 12 |
| CCD-TR82 | ○ | | ○ | | ○ | 12 |

### Note on TV Color Systems

TV color systems differ from country to country.
To view your recordings on a TV, you need an NTSC system based TV. When you want to use a PAL-M system based TV, you will need a NTSC/PAL-M transcoder (as this is an NTSC system based camcorder). Please check the list on page 39 to see the TV color system of your country.

### Note on the Supplied RFU adaptor

You can use the supplied RFU adaptor only in the country where you bought this camcorder. Since each country has its own electricity and TV color system, you may not be able to use the RFU adaptor when you use the camcorder abroad.

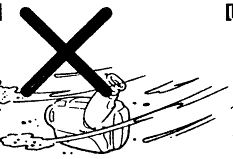
### Precaution on Copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

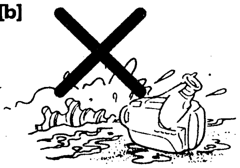
### Precautions on Camcorder Care

- **Do no let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [a]**
- **Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [b]**
- Never leave the camcorder under temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight. **[c]**

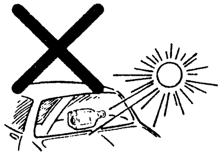
[a]



[b]

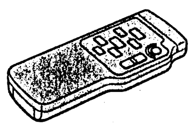
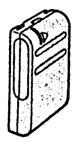
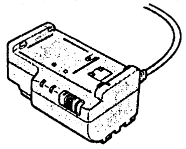
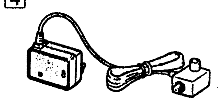
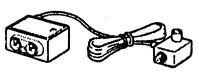
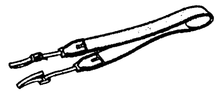
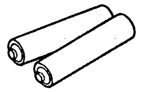
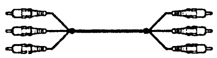


[c]



## Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.

| | | |
|---|---|---|
| 1  | 2  | 3  |
| 4  RFU-90UC or  RFU-95UC | | 5  |
| 6 | 7  | 8  (CCD-TR72/TR80) |

1 **Wireless remote commander (1)** (p.17, 48)

2 **NP-55 Battery pack (1)** (p.6, 33)

3 **AC-V25/V25A/V25B AC power adaptor (1)** (p.6, 19)

4 **RFU-90UC/95UC RFU adaptor (1)** (p.16)

5 **Shoulder strap (1)** (p.46)

6 **CR2025 Lithium Battery (1)** (p.30)
Already installed in the camcorder.

7 **Size AA (R16) Battery for Remote Commander (2)** (p.48)

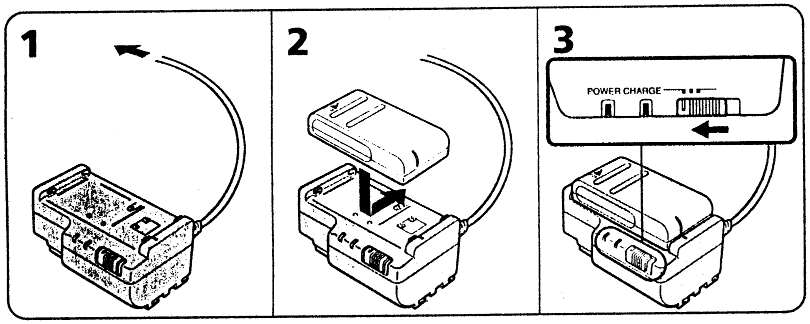
8 **A/V connecting cable (1)** (p.16)
For CCD-TR72/TR80 only

# Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25/V25A/V25B AC power adaptor.

## Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
**(1)** Connect the AC power adaptor to a wall outlet. **(2)** Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. **(3)** Set the selector to CHARGE. The POWER lamp (green) and the CHARGE lamp (orange) light up. Charging begins.
When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder. To stop charging, set the selector to the center position.



### Charging Time

| Battery pack | NP-55 (supplied) | NP-80<br>NP-80D | NP-77H | NP-66H | NP-60D | NP-55H |
|---|---|---|---|---|---|---|
| Charging time* | 70 | 180 | 160 | 120 | 90 | 80 |

* Approximate minutes to charge an empty pack using the AC-V25/V25A/V25B (Lower temperatures require a longer charging time.)

### Battery Life

**CCD-TR42/TR72**

| Battery Pack | NP-55 | NP-80/ 80D | NP-77H | NP-66H | NP-60D | NP-55H |
|---|---|---|---|---|---|---|
| Typical recording time** | 35 | 95 | 85 | 65 | 45 | 40 |
| Continuous recording time*** | 65 | 180 | 160 | 120 | 85 | 75 |

**CCD-TR70/TR80**

| Battery pack | NP-55 | NP-80/ 80D | NP-77H | NP-66H | NP-60D | NP-55H |
|---|---|---|---|---|---|---|
| Typical recording time** | 30 | 90 | 80 | 60 | 40 | 35 |
| Continuous recording time*** | 60 | 170 | 150 | 110 | 80 | 70 |

**CCD-TR82**

| Battery pack | NP-55 | NP-80/ 80D | NP-77H | NP-66H | NP-60D | NP-55H |
|---|---|---|---|---|---|---|
| Typical recording time** | 30 | 85 | 75 | 55 | 40 | 35 |
| Continuous recording time*** | 55 | 165 | 145 | 105 | 75 | 65 |

** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.
*** Approximate continuous recording time indoors.

**Important!**

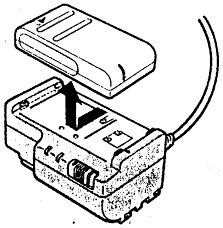
**Use the battery completely before re-charging!**

Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the 🪫 indicator and the red lamp flash rapidly in the viewfinder.

## Removing the Battery Pack

Slide the battery pack in the direction of the arrow.



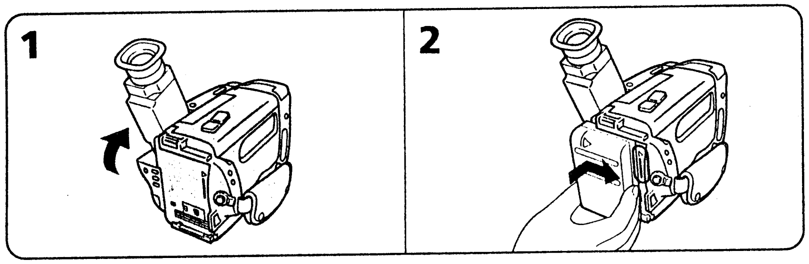
**Notes on charging the battery pack**

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

## Charging and Installing the Battery Pack

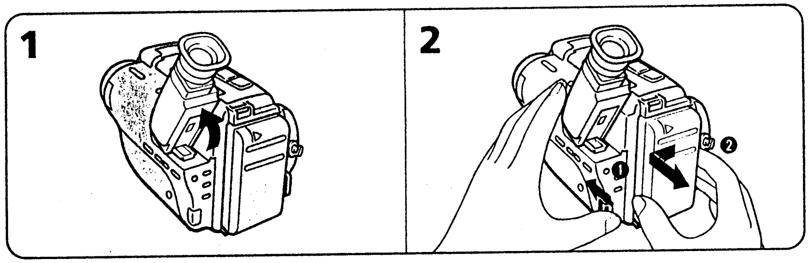
### Installing the Battery Pack

**(1)** Lift up the viewfinder. **(2)** Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.



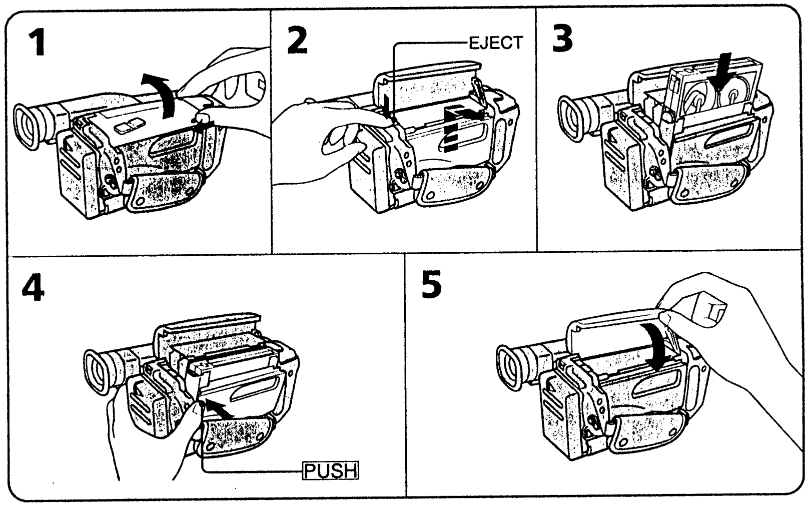
### Removing the Battery Pack

**(1)** Lift up the viewfinder. **(2)** While pressing BATT, slide the battery pack to the left.



## Inserting a Cassette

Make sure that a power source is installed.
**(1)** While sliding the lid lock, lift up the lid. Then open it. **(2)** Press EJECT. The cassette compartment automatically lifts up and opens. **(3)** Insert a cassette (not supplied) with the window facing out.
**(4)** Press the PUSH mark on the cassette compartment to close it. The cassette compartment automatically goes down. **(5)** Close the lid until it locks.

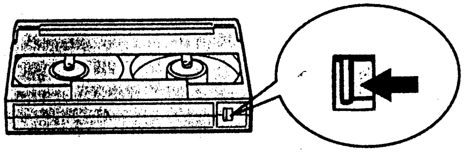


### To Eject the Cassette

Press EJECT.

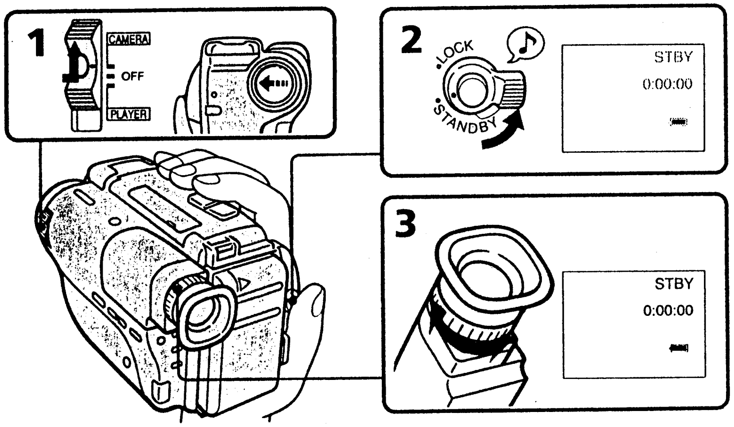
### To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark.
If you try to record with the red mark exposed, the ⊡ and ⏏ indicators flash in the viewfinder, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.



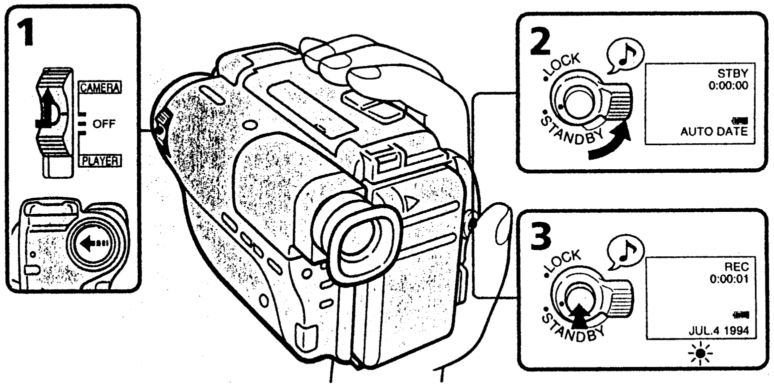
## Adjusting the Viewfinder Lens

Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is connected to the camcorder.
**(1)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.


1
CAMERA
OFF
PLAYER
2
LOCK
STANDBY
STBY
0:00:00
3
STBY
0:00:00

## Camera Recording

Make sure that a power source and a cassette is inserted. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day. You can hear the beep sound to confirm your operation. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
**(1)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Press START/STOP. The camcorder starts recording and the "REC" indicator apperars in the viewfinder.


1
CAMERA
OFF
PLAYER
2
LOCK
STANDBY
STBY
0:00:00
AUTO DATE
3
LOCK
STANDBY
REC
0:00:01
JUL.4 1994

**Note on beep sound**
As indicated with ♪ in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder (p.51). Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system (p.25).

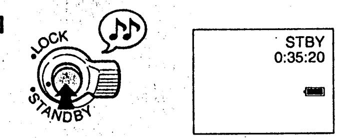
### To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

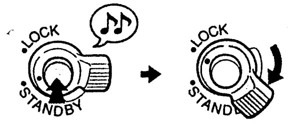
### To Finish Recording [b]

Press START/STOP. Turn STANDBY down, and set the POWER switch to OFF.
Then, eject the cassette (p.9).

[a]


LOCK
STANDBY
STBY
0:35:20

[b]


LOCK
STANDBY
LOCK
STAND

See the next page for further information.

**Note on Standby mode**
If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

**Note on recording**
When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape. You can record tapes in SP (standard play) mode only.

**Note on the tape counter**
The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET located below the viewfinder. You can know the approximate remaining tape by the remaining tape indicator (p.50).

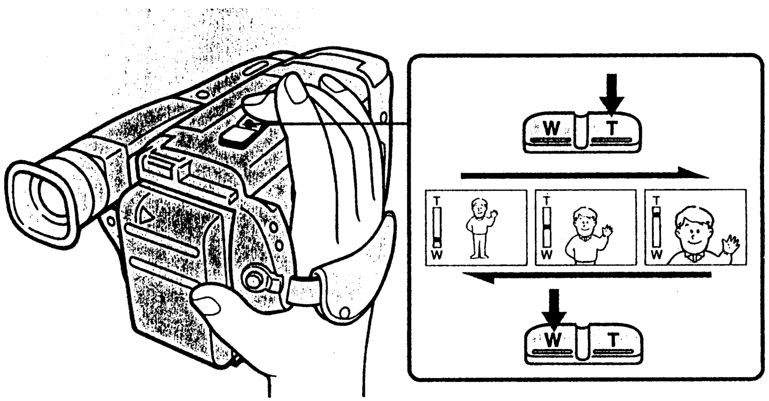
**Note on the AUTO DATE feature**
The clock is set to the East Coast Standard Time at the factory. You can reset the clock (p.31).
You can change the AUTO DATE setting by selecting ON or OFF in the menu system (p.25).

- The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:
  - you reset the date and time.
  - you eject and insert the tape again.
  - you stop recording within 10 seconds.
  - you set AUTO DATE to OFF once and set to ON in the menu system.
- Once the AUTO DATE feature turns off the date display 10 seconds after the start of recording, the date and time are displayed as follows:
  - if the date display setting has been made, the date is displayed.
  - if the time display setting has been made, the time is displayed.
  - if neither display setting has been made, nothing is displayed.

**When moving from indoors to outdoors (or vice versa)**
Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

## Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. For more professional-looking recordings, use the zoom sparingly.
T side: for telephoto (subject appears closer)
W side: for wide-angle (subject appears farther away)



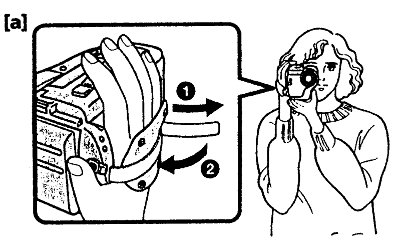
**Zooming Speed**
Press the power zoom button firmly for a high-speed zoom. Press it softly for a relatively slow zoom.

**When you shoot a subject using a telephoto zoom**
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus is sharp.
You can shoot a subject that is at least 3.3 feet (about 1 m) away from the lens surface in the telephoto position, or 1/2 inches (about 1cm) in the wide-angle position.

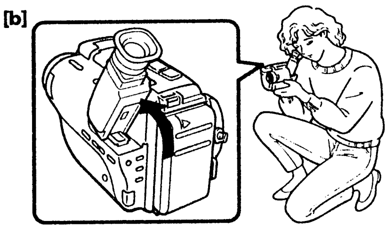
# Hints for Better Shooting

For hand-held shots, you'll get better results holding the camcorder according to the following suggestions:

[a]



[b]



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. **[b]**

1-6

**Place the camcorder on a flat surface or use a tripod.**

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p.46). Make sure the tripod screw is shorter than 9/32 in (6.5mm).

## To Use the Viewfinder as a Sports Finder [c]

With the sports finder, you can monitor the picture while your eye is at a distance from the eyecup.
The sports finder is convenient when moving around to shoot scenes.
While sliding the viewfinder release knob to the left, flip open the viewfinder.

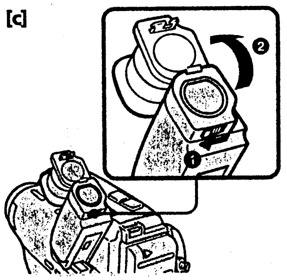
**Note on the color viewfinder (for CCD-TR70/TR80)**

You may find it difficult to use the color viewfinder as the sports finder for recording in light location.

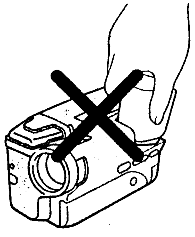
**Cautions on the viewfinder**

- Do not pick up the camcorder by the viewfinder. **[d]**
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be deformed. Be careful in placing the camcorder under sunlight or at the window. **[e]**

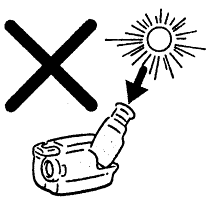
[c]



[d]

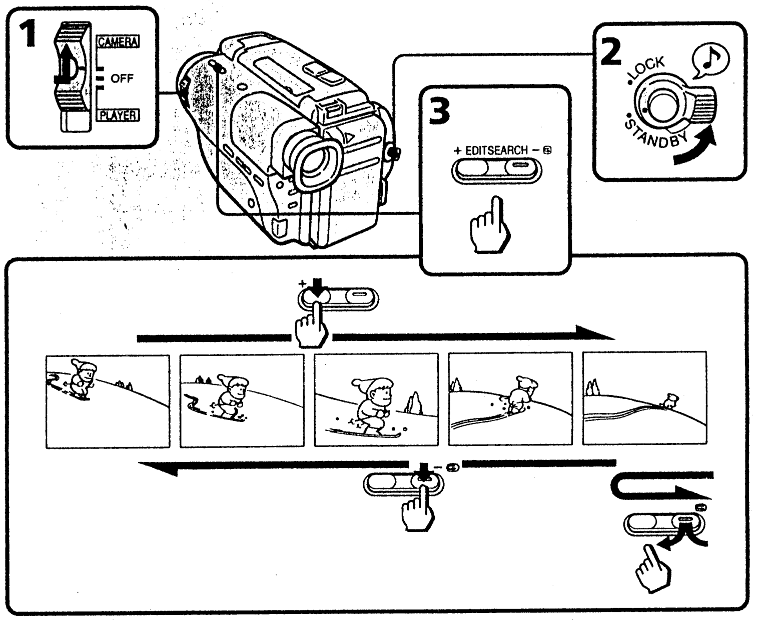


[e]



# Checking the Recorded Picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.
**(1)** While pressing the small green button on the POWER switch, slide it to CAMERA.
**(2)** Turn STANDBY up. **(3)** Press EDITSEARCH. Press the – (⊜) side momentarily, the last few seconds of the recorded portion plays back (**Rec Review**).
Keep pressing EDITSEARCH to play back the last recorded portion (**Edit Search**).
+ side: to view the forward playback picture
– side: to view the reverse playback picture



## To Stop Playback

Release EDITSEARCH.

## To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

## Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

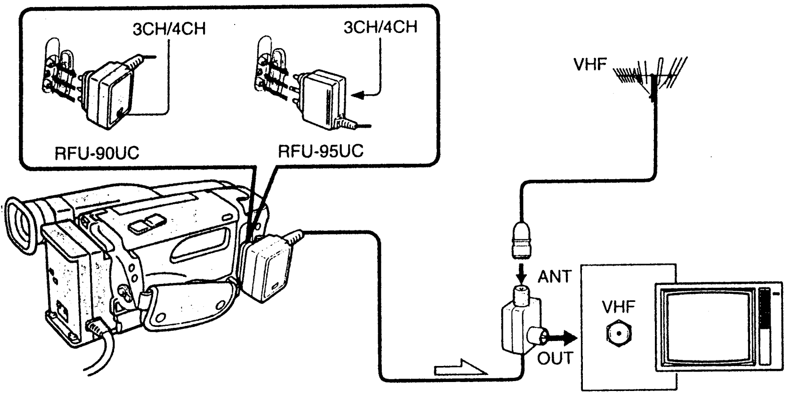
Connect earphone/headphones (not supplied) to the ⑨/🎧 jack. Play back the tape in PLAYER mode (p.17).

# Connections for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are some ways to connect your camcorder as shown below. It is recommended to use the house current as the power source (p.19).

## Connecting to a TV without Video/Audio Input Jacks

Connect the camcorder to the TV using the supplied RFU adaptor. Set the channel selector on the RFU adaptor and your TV channel to VHF channel CH3 or CH4, whichever is not active in your area. With this connection, the sound is monaural.

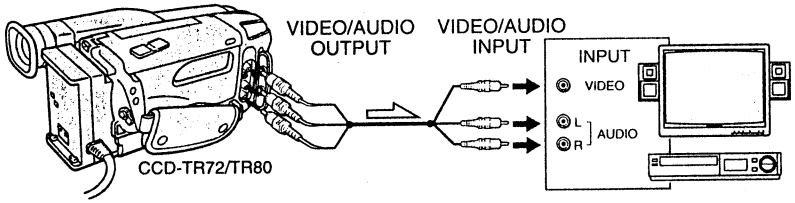

3CH/4CH
3CH/4CH
RFU-90UC
RFU-95UC
VHF
ANT
VHF
OUT

⇨ : Signal flow

## Connecting to a TV with Video/Audio Input Jacks or VCR

### For Stereo Models (CCD-TR72/TR80)

Connect the camcorder to your TV by using the supplied connecting cable. Set the TV/VCR selector to VCR on the TV. When connecting the camcorder to VCR, set the input selector on the VCR to LINE.

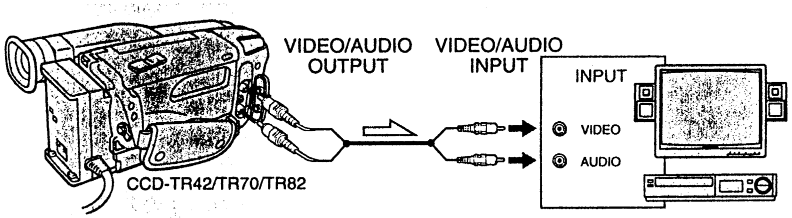

VIDEO/AUDIO OUTPUT
VIDEO/AUDIO INPUT
INPUT
VIDEO
L
R
AUDIO
CCD-TR72/TR80

⇨ : Signal flow

If your TV or VCR is monaural type, connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural.

### For Monaural Models (CCD-TR42/TR70/TR82)

Connect the camcorder to your TV by using a monarual A/V connecting cable (not supplied). Set the TV/VCR selector to VCR on the TV. When connecting the camcorder to VCR, set the input selector on the VCR to LINE.

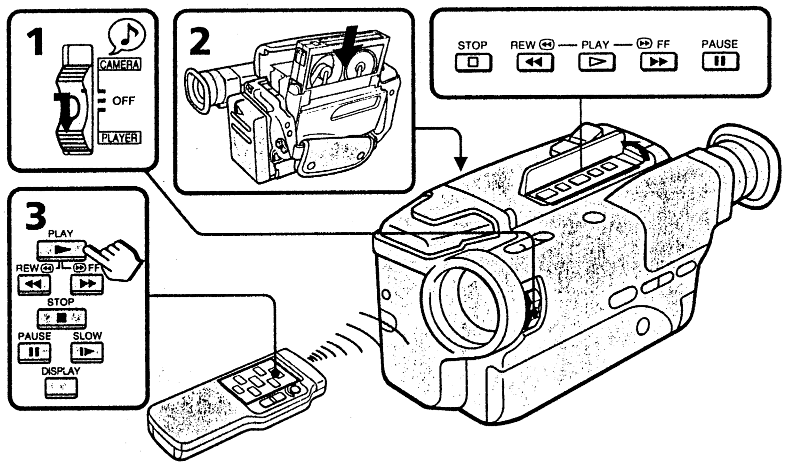

VIDEO/AUDIO OUTPUT
VIDEO/AUDIO INPUT
INPUT
VIDEO
AUDIO
CCD-TR42/TR70/TR82

⇨ : Signal flow

# Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p.16). You can control playback using the supplied Remote Commander (p.49).

**(1)** While pressing the small green button on the POWER switch, slide it to PLAYER. **(2)** Insert the recorded tape with the window facing out. **(3)** Press ▷. Playback starts.


1
CAMERA
OFF
PLAYER
2
STOP
REW
PLAY
FF
PAUSE
3
PLAY
REW
FF
STOP
PAUSE
SLOW
DISPLAY

See the next page for further information.

## Playing Back a Tape

**To stop playback,** press □.
**To rewind the tape,** press ◀◀.
**To advance the tape rapidly,** press ▶▶.

### Various Playback Modes

**To view a still picture (playback pause)**
Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

**To locate a scene (Picture Search)**
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

**To monitor the high-speed picture during fastforward or rewind (Skip Scan)**
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

**To view the picture in a sequence of stop-motion images**
Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture playback in the forward (+) or reverse (–) direction.

**To view the picture at 1/5 speed (Slow Playback) (only with the Remote Commander)**
Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▷. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

**Note on playback**
- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.

**To display the viewfinder screen indicators on the TV**
Press DISPLAY on the Remote Commander.
To erase the indicators, press DISPLAY again.

**To select the monitor sound – For stereo models (CCD-TR72/TR80)**
Change the"HiFi SOUND" mode setting in the menu system (p.25)

**Advanced Operations**

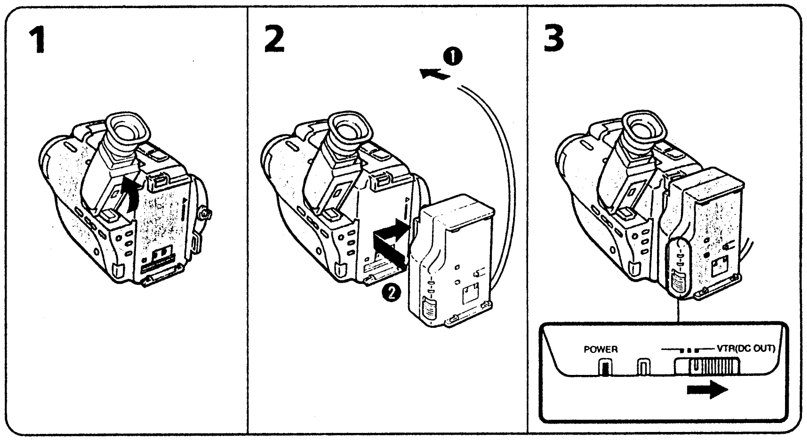
## Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (P.6), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

| Place | Power source | Accessory to be used |
|---|---|---|
| Indoors | House current | AC power adaptor AC-V25/V25A/V25B (supplied), AC-S10, AC-V55 |
| Outdoor | Battery pack | Battery pack NP-55 (supplied), NP-80, NP-80D, NP-77H, NP-66H, NP-60D, NP-55H |
| In the car | 12 V or 24 V car battery | DC pack DCP-77 |

### Using House Current

To use the supplied AC-V25/A25A/V25B AC power adaptor:
**(1)** Lift up the viewfinder. **(2)** Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder. **(3)** Set the selector to VTR (DC OUT).



**Notes on the POWER lamp**
- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

**To remove the adapter**
The adaptor is removed in the same way as the battery pack. (p.8)

# Using Alternate Power Sources

## Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of a car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

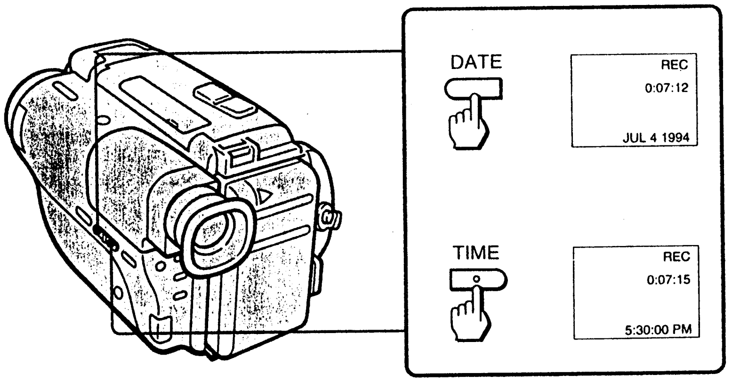
**To remove the DC pack**
The DC pack is removed in the same way as the battery pack. (p.8)

## Options for Charging the Battery Pack

- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.
- BC-S10 portable battery charger ( ideal for travel):
  You can charge a battery pack on 100 — 240 V AC current.

# Recording with the Date or Time

Before you start recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.
The clock is set to the East Coast Standard Time at the factory.

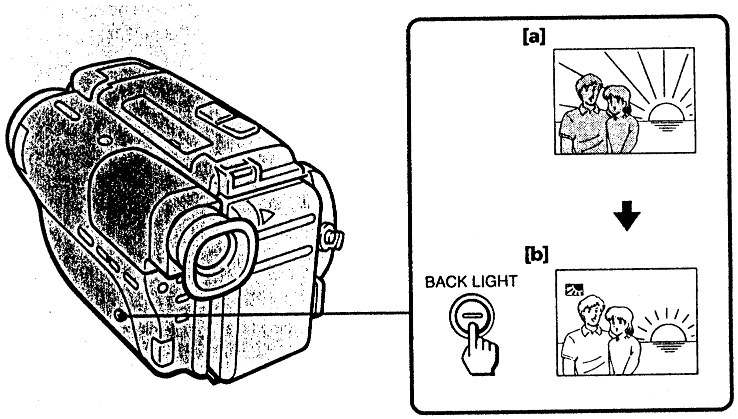


### To Stop Recording with the Date or Time
Press DATE or TIME again. Recording continues.

# Shooting with Backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT.

Press BACK LIGHT. The ▨ indicator appears inside the viewfinder.



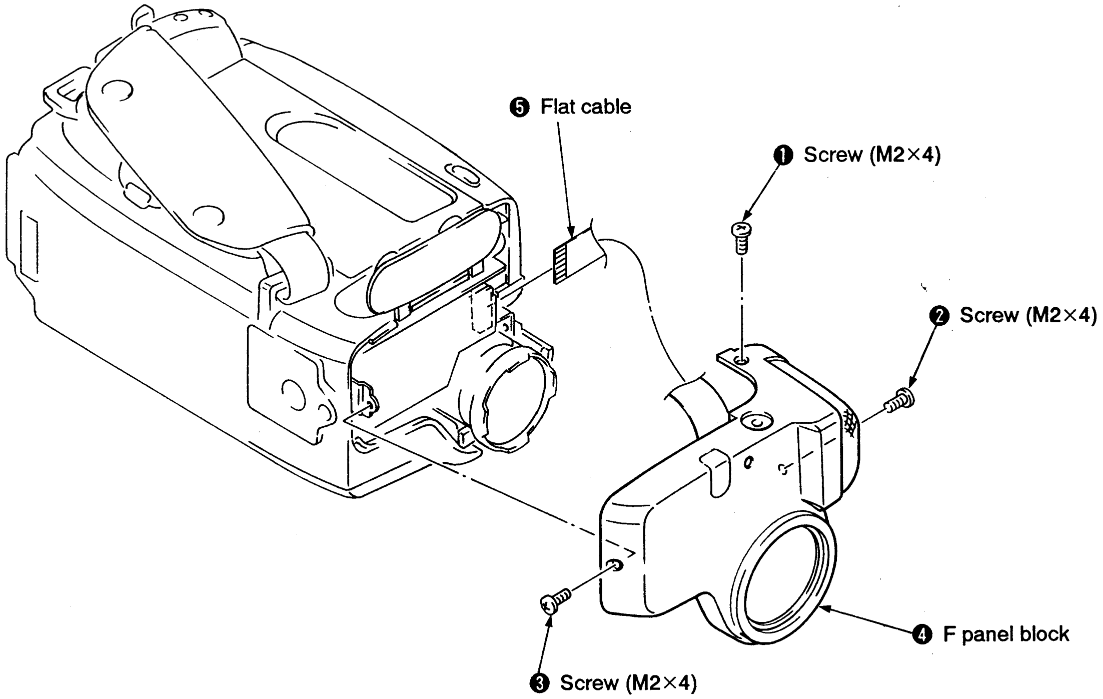
**[a]** Subject is too dark because of backlight.
**[b]** Subject becomes bright with backlight compensation.

### After shooting
Press BACK LIGHT again to let the ▨ indicator go out under normal lighting condition. Otherwise, the picture will be too bright under normal lighting condition.

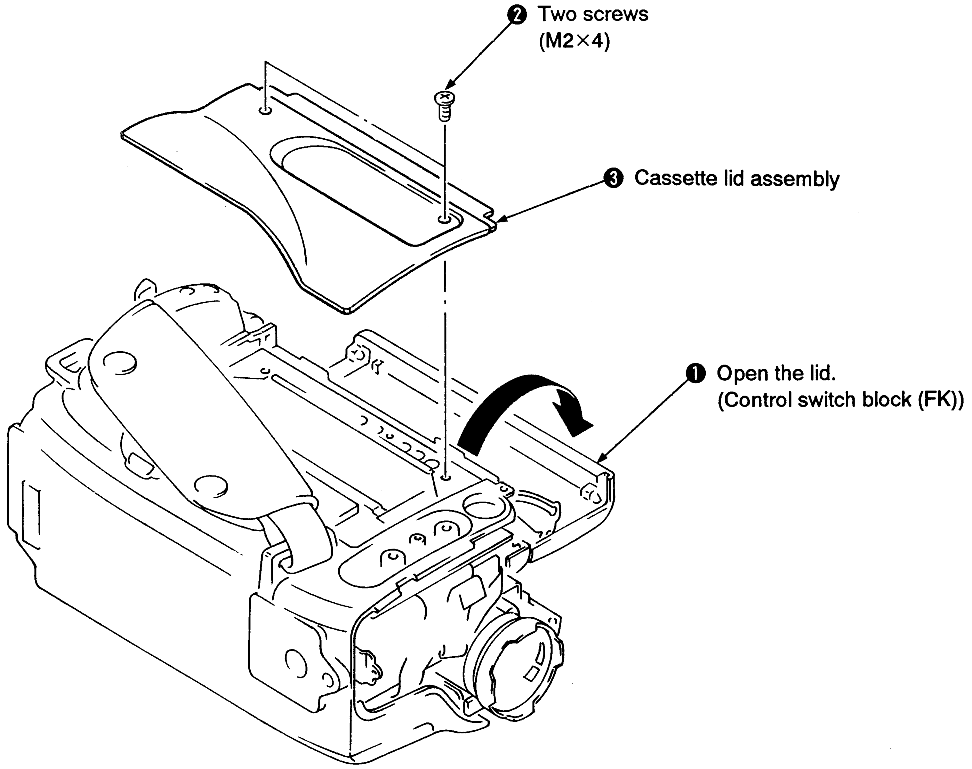
**This function is also effective under following conditions:**
- On the snow e.g. at the ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

# SECTION 2
# DISASSEMBLY

## 2-1. REMOVAL OF F PANEL BLOCK

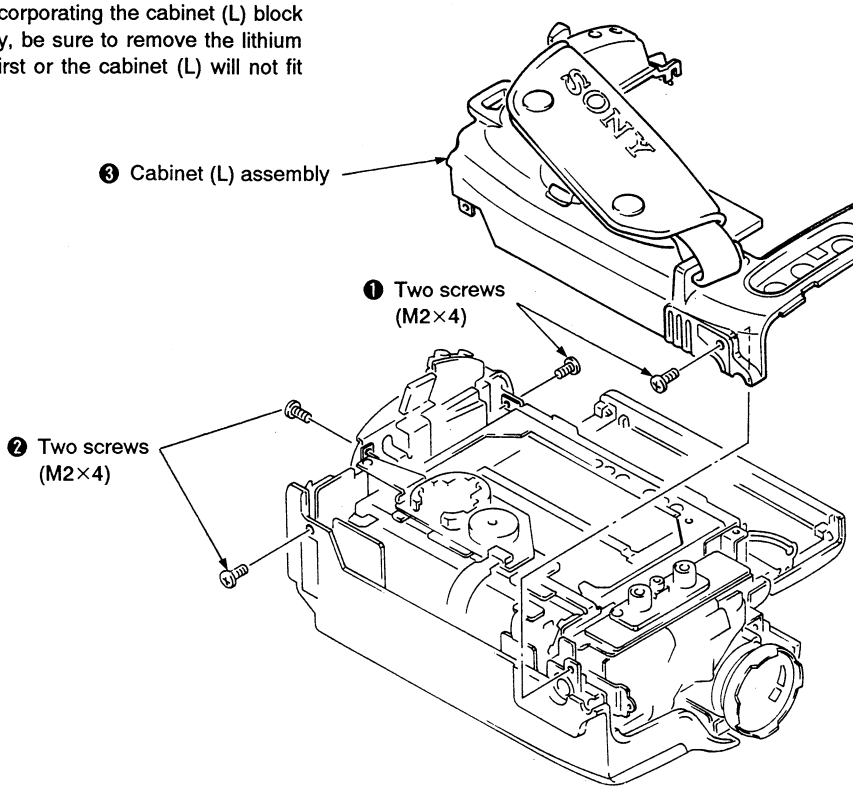

❺ Flat cable
❶ Screw (M2×4)
❷ Screw (M2×4)
❹ F panel block
❸ Screw (M2×4)

## 2-2. REMOVAL OF CASSETTE LID ASSEMBLY

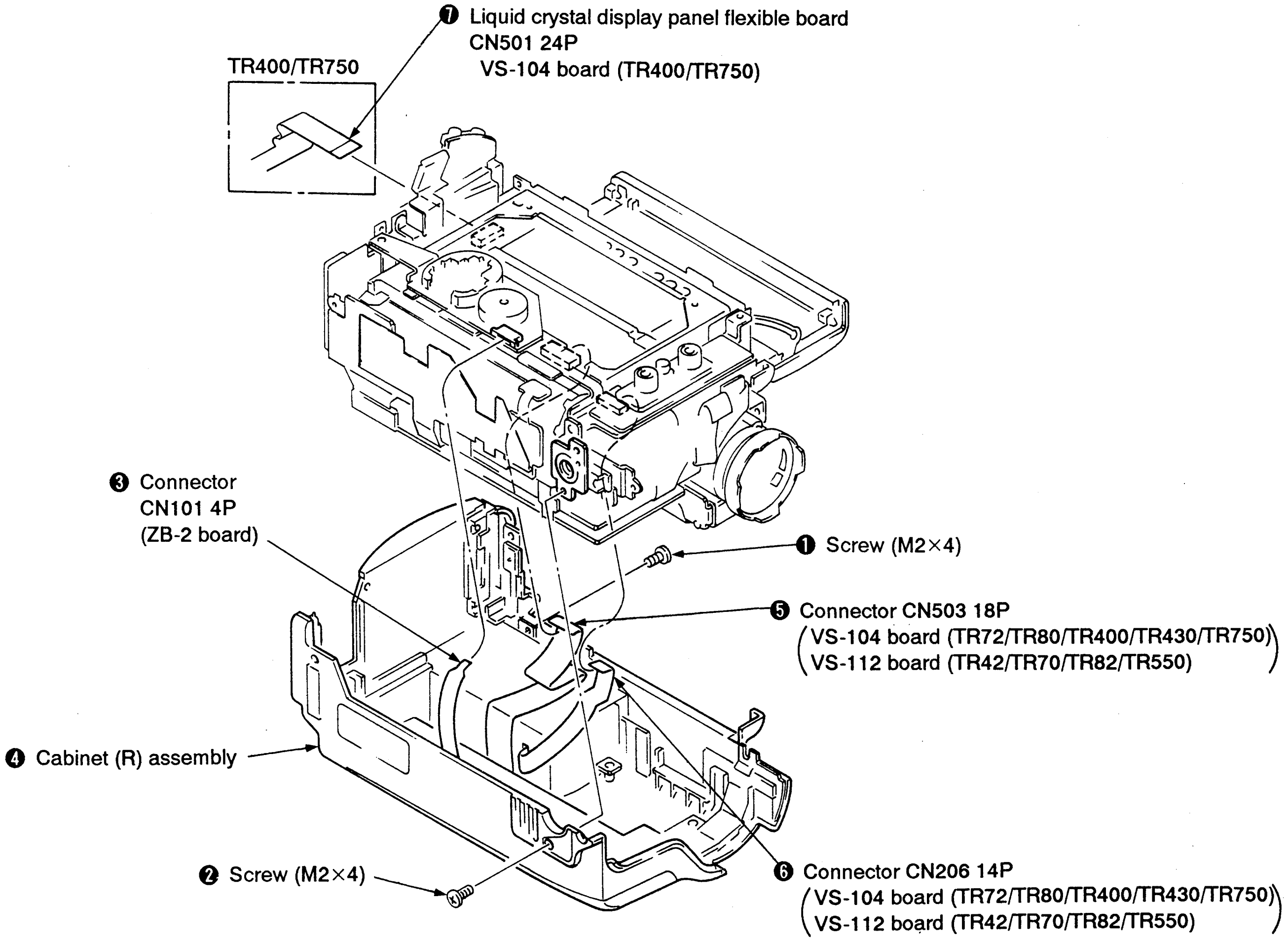

❷ Two screws
(M2×4)
❸ Cassette lid assembly
❶ Open the lid.
(Control switch block (FK))

## 2-3. REMOVAL OF CABINET (L) ASSEMBLY

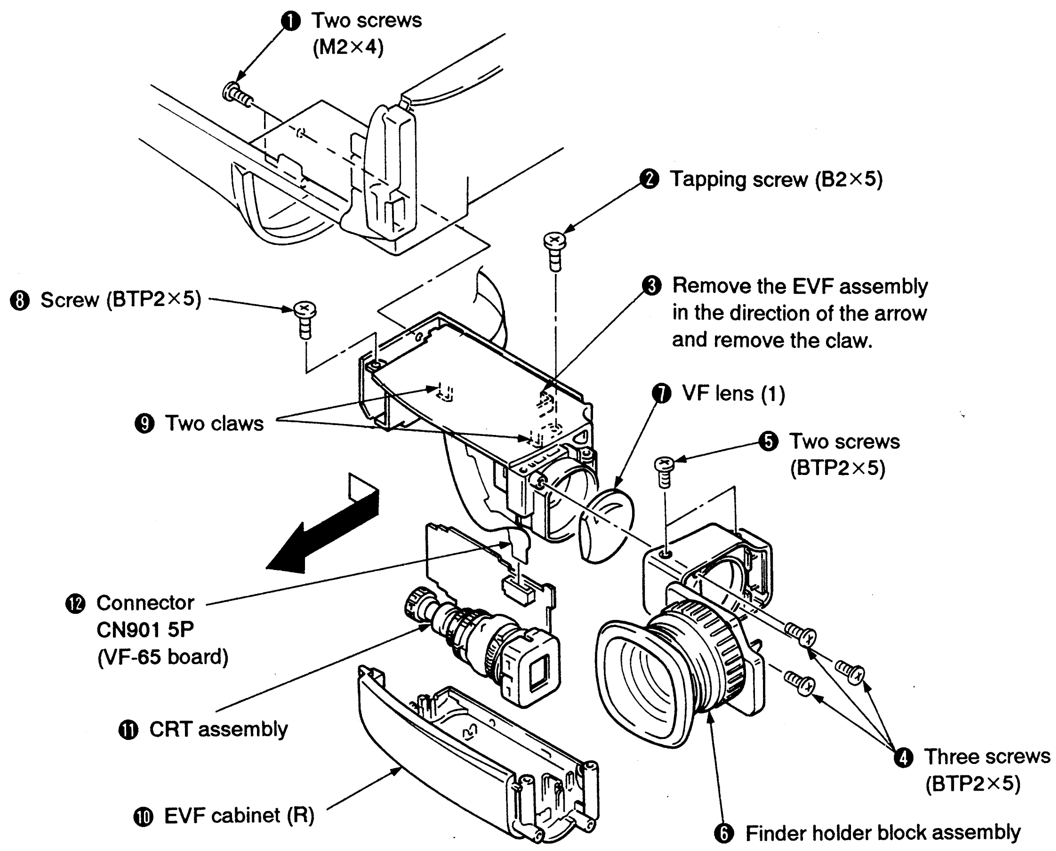
**Note:** When incorporating the cabinet (L) block assembly, be sure to remove the lithium battery first or the cabinet (L) will not fit properly.


❸ Cabinet (L) assembly
SONY
❶ Two screws (M2×4)
❷ Two screws (M2×4)

## 2-4. REMOVAL OF CABINET (R) ASSEMBLY

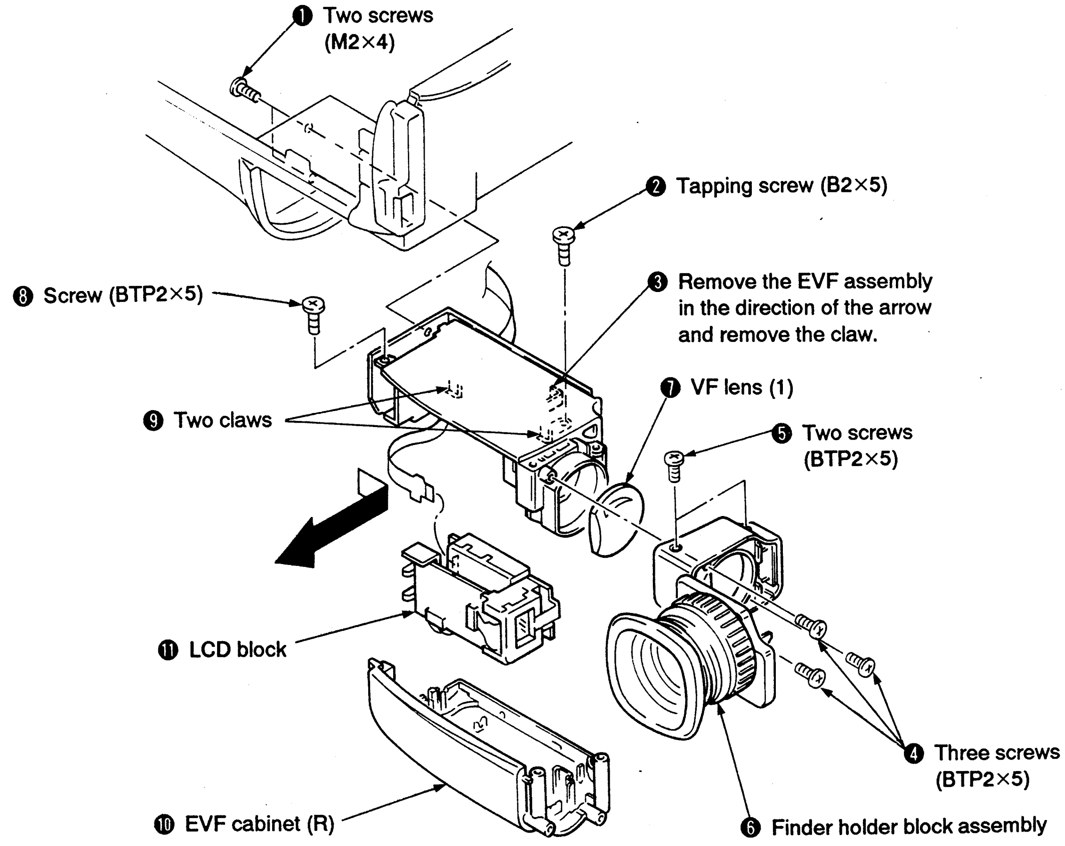

❼ Liquid crystal display panel flexible board CN501 24P VS-104 board (TR400/TR750)
TR400/TR750
❸ Connector CN101 4P (ZB-2 board)
❶ Screw (M2×4)
❺ Connector CN503 18P (VS-104 board (TR72/TR80/TR400/TR430/TR750) VS-112 board (TR42/TR70/TR82/TR550))
❹ Cabinet (R) assembly
❷ Screw (M2×4)
❻ Connector CN206 14P (VS-104 board (TR72/TR80/TR400/TR430/TR750) VS-112 board (TR42/TR70/TR82/TR550))

## 2-5. REMOVAL OF EVF ASSEMBLY (TR42/TR72/TR82/TR400/TR430/TR550/TR750)



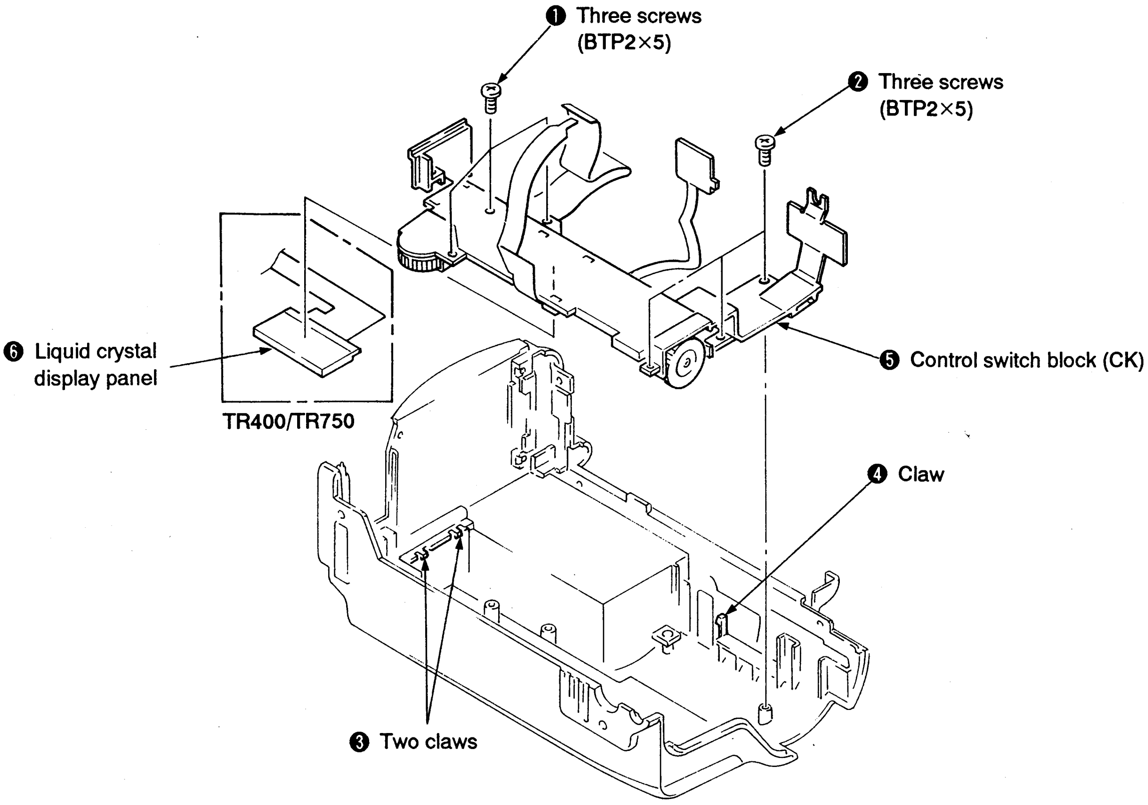
❶ Two screws (M2×4)
❷ Tapping screw (B2×5)
❽ Screw (BTP2×5)
❸ Remove the EVF assembly in the direction of the arrow and remove the claw.
❼ VF lens (1)
❾ Two claws
❺ Two screws (BTP2×5)
⓬ Connector CN901 5P (VF-65 board)
⓫ CRT assembly
❹ Three screws (BTP2×5)
❿ EVF cabinet (R)
❻ Finder holder block assembly

## 2-5. REMOVAL OF EVF ASSEMBLY (TR70/TR80)

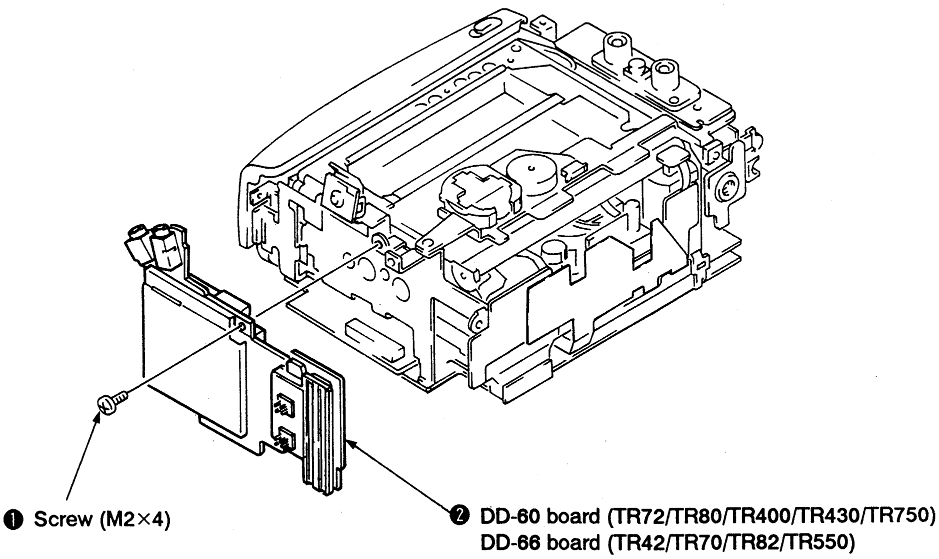


❶ Two screws (M2×4)
❷ Tapping screw (B2×5)
❽ Screw (BTP2×5)
❸ Remove the EVF assembly in the direction of the arrow and remove the claw.
❼ VF lens (1)
❾ Two claws
❺ Two screws (BTP2×5)
⓫ LCD block
❹ Three screws (BTP2×5)
❿ EVF cabinet (R)
❻ Finder holder block assembly

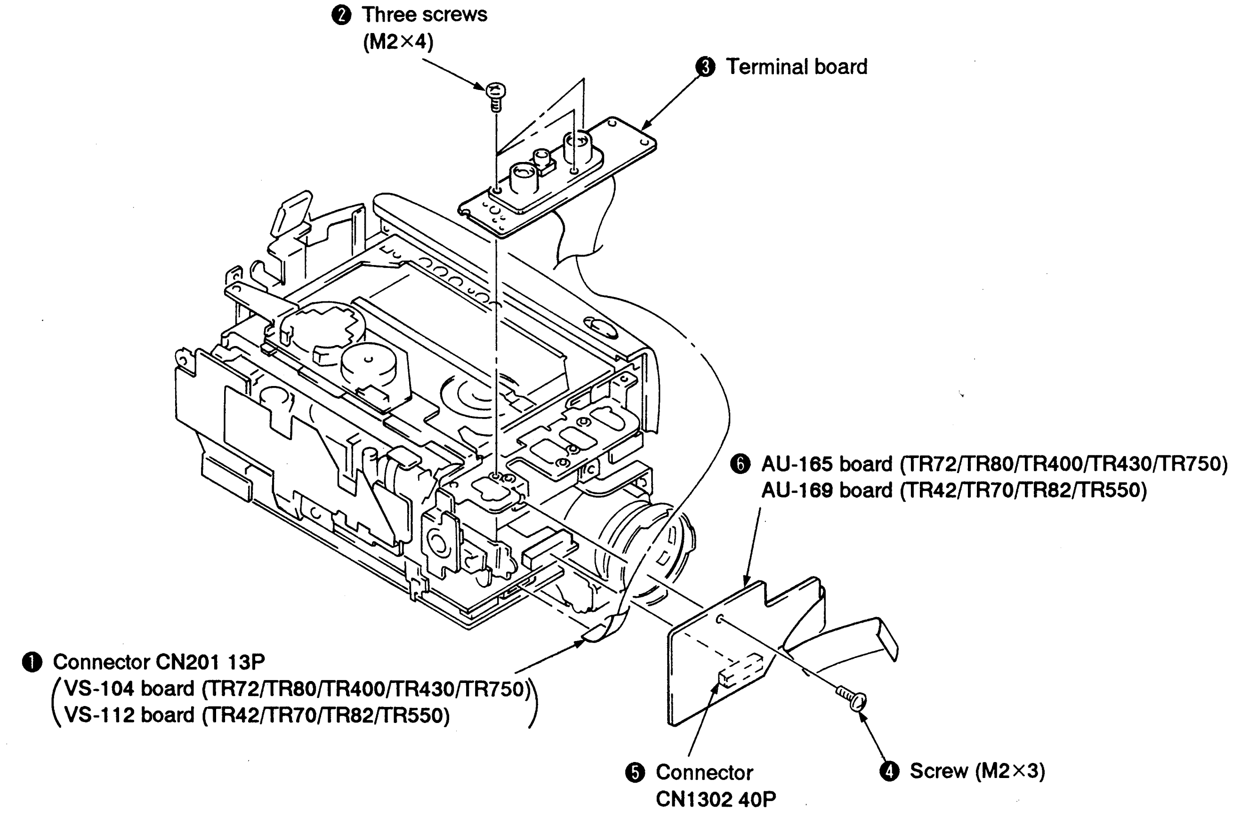
## 2-6. REMOVAL OF CONTROL SWITCH BLOCK (CK)


❶ Three screws (BTP2×5)
❷ Three screws (BTP2×5)
❻ Liquid crystal display panel
TR400/TR750
❺ Control switch block (CK)
❹ Claw
❸ Two claws

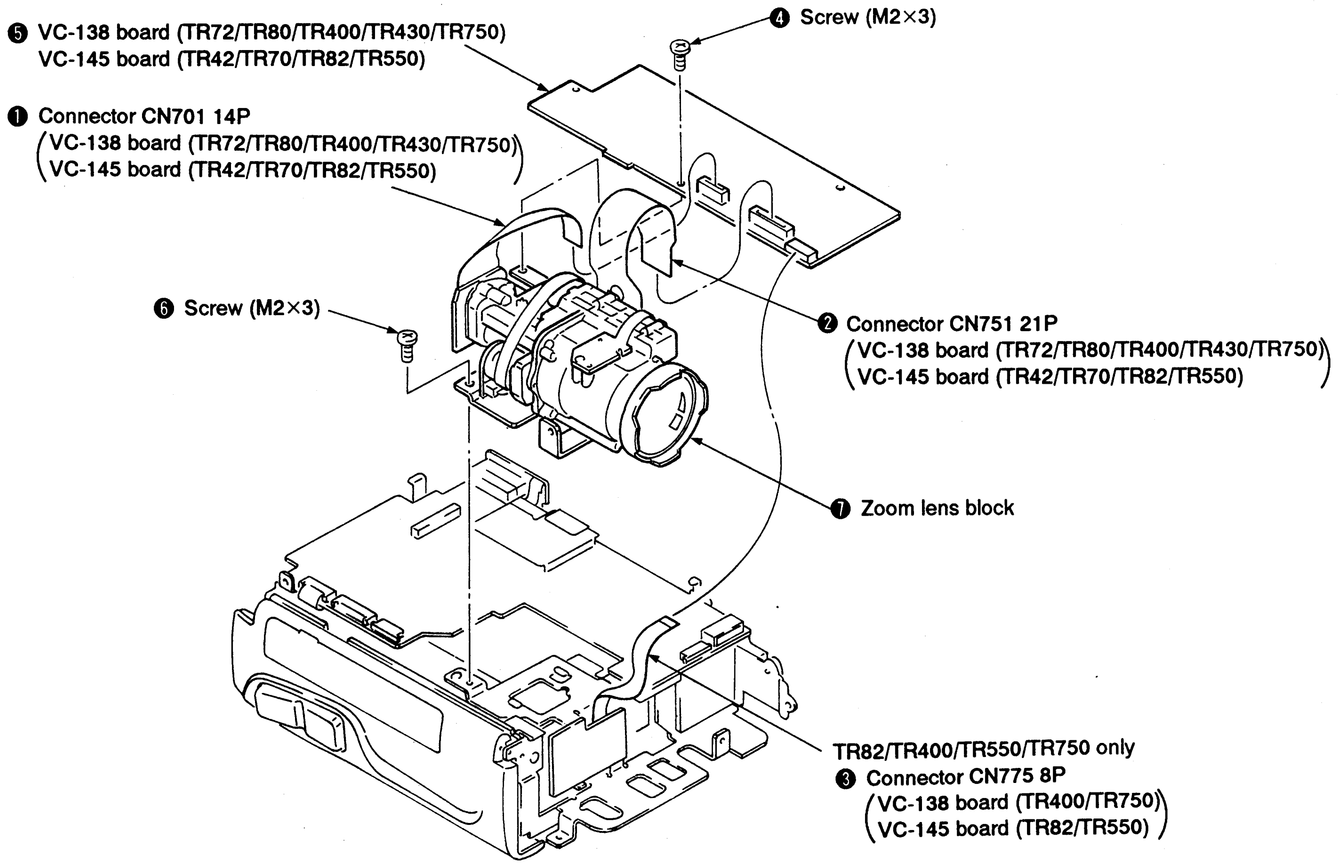
## 2-7. REMOVAL OF DD-60 BOARD (TR72/TR80/TR400/TR430/TR750) REMOVAL OF DD-66 BOARD (TR42/TR70/TR82/TR550)


❶ Screw (M2×4)
❷ DD-60 board (TR72/TR80/TR400/TR430/TR750)
DD-66 board (TR42/TR70/TR82/TR550)

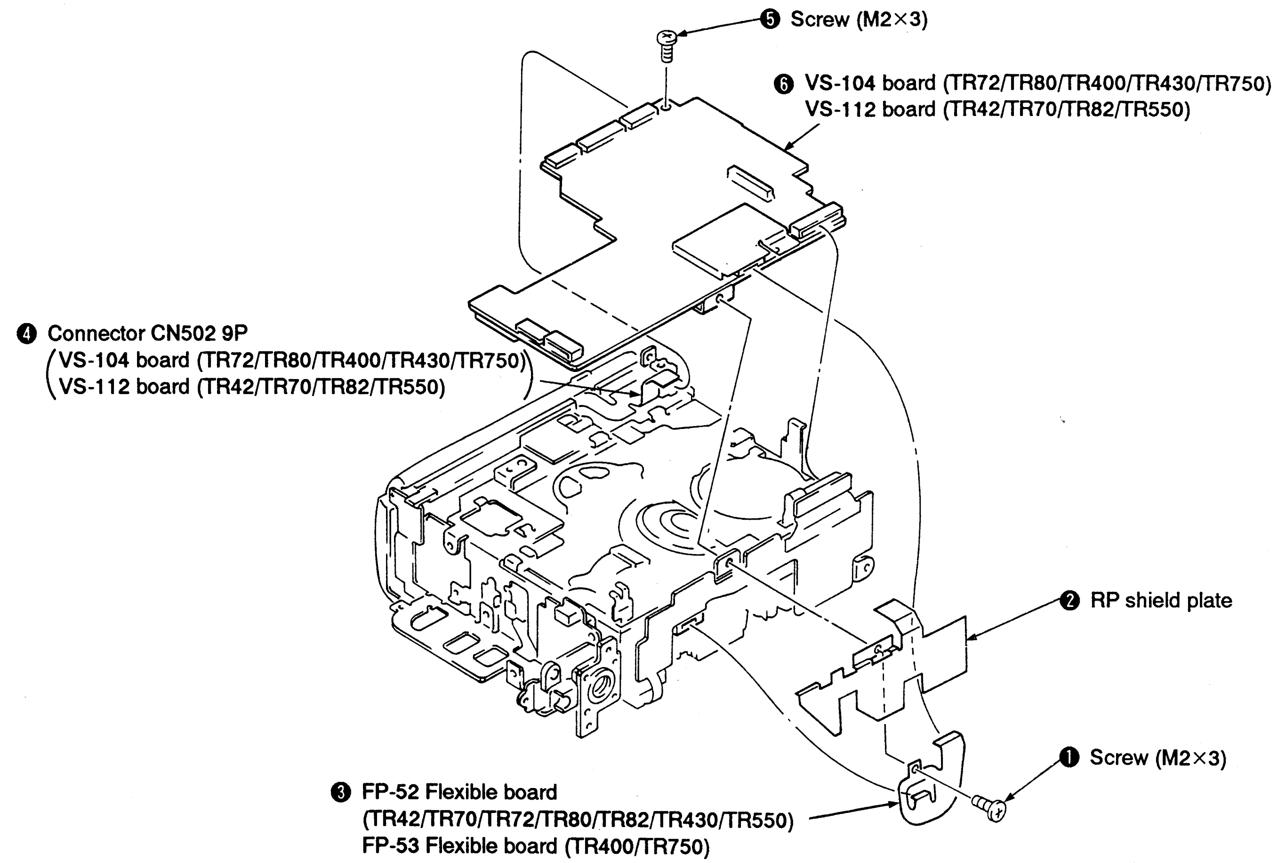
## 2-8. REMOVAL OF TERMINAL BOARD AND AU-165 BOARD (TR72/TR80/TR400/TR430/TR750), AU-169 BOARD (TR42/TR70/TR82/TR550)


❷ Three screws (M2×4)
❸ Terminal board
❻ AU-165 board (TR72/TR80/TR400/TR430/TR750)
AU-169 board (TR42/TR70/TR82/TR550)
❶ Connector CN201 13P
(VS-104 board (TR72/TR80/TR400/TR430/TR750)
VS-112 board (TR42/TR70/TR82/TR550))
❺ Connector CN1302 40P
❹ Screw (M2×3)

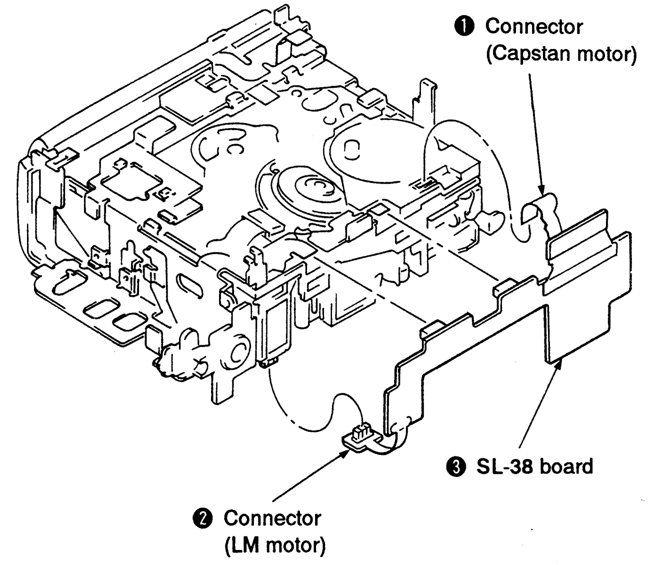
## 2-9. REMOVAL OF ZOOM LENS BLOCK AND VC-138 BOARD (TR72/TR80/TR400/TR430/TR750), VC-145 BOARD (TR42/TR70/TR82/TR550)


❺ VC-138 board (TR72/TR80/TR400/TR430/TR750)
VC-145 board (TR42/TR70/TR82/TR550)
❹ Screw (M2×3)
❶ Connector CN701 14P
(VC-138 board (TR72/TR80/TR400/TR430/TR750)
VC-145 board (TR42/TR70/TR82/TR550))
❻ Screw (M2×3)
❷ Connector CN751 21P
(VC-138 board (TR72/TR80/TR400/TR430/TR750)
VC-145 board (TR42/TR70/TR82/TR550))
❼ Zoom lens block
TR82/TR400/TR550/TR750 only
❸ Connector CN775 8P
(VC-138 board (TR400/TR750)
VC-145 board (TR82/TR550))

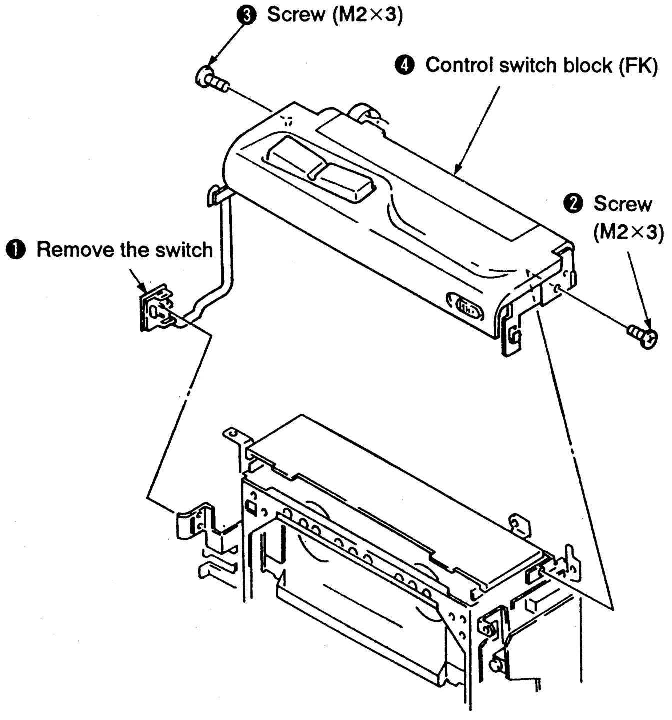
## 2-10. REMOVAL OF VS-104 BOARD (TR72/TR80/TR400/TR430/TR750) REMOVAL OF VS-112 BOARD (TR42/TR70/TR82/TR550)


❺ Screw (M2×3)
❻ VS-104 board (TR72/TR80/TR400/TR430/TR750)
VS-112 board (TR42/TR70/TR82/TR550)
❹ Connector CN502 9P
(VS-104 board (TR72/TR80/TR400/TR430/TR750)
VS-112 board (TR42/TR70/TR82/TR550))
❷ RP shield plate
❶ Screw (M2×3)
❸ FP-52 Flexible board
(TR42/TR70/TR72/TR80/TR82/TR430/TR550)
FP-53 Flexible board (TR400/TR750)

## 2-11. REMOVAL OF SL-38 BOARD

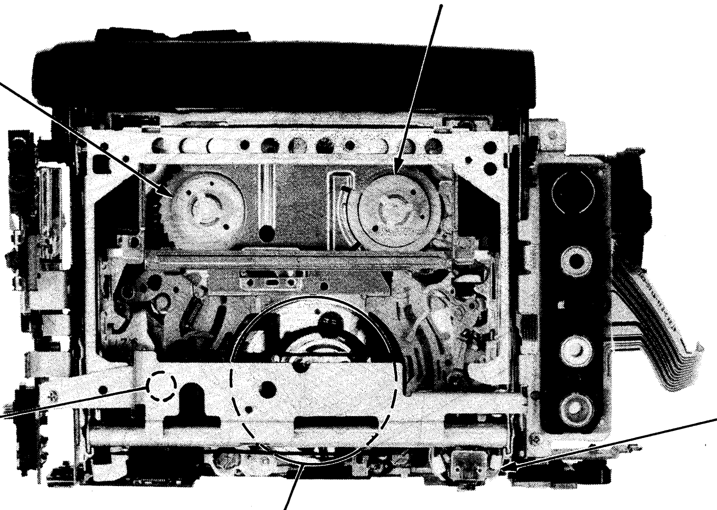

❶ Connector
(Capstan motor)
❸ SL-38 board
❷ Connector
(LM motor)

## 2-12. REMOVE OF CONTROL SWITCH BLOCK (FK)


❸ Screw (M2×3)
❹ Control switch block (FK)
❷ Screw
(M2×3)
❶ Remove the switch

## 2-13. INTERNAL VIEWS

### — Left side —



S reel table assembly
X-3943-676-1

T reel table assembly
X-3941-274-1

M902
Capstan motor

M903
Loading motor assembly
A-7040-304-A

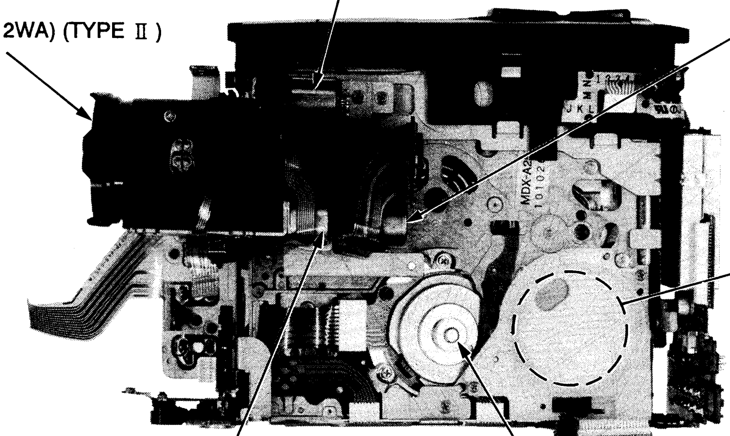
M901 (TR42/TR70/TR72/TR80/TR82/TR430/TR550)

| | | |
|---|---|---|
| Drum assembly | DGH-78A-R | A-7048-564-A |
| Upper drum assembly | DGR-78-R | A-7049-501-A |

M901 (TR400/TR750)

| | | |
|---|---|---|
| Drum assembly | DGH-92A-R | A-7048-633-A |
| Upper drum assembly | DGR-92-R | A-7049-567-A |

### — Right side —



M907 (TYPE Ⅱ only)
IG meter
3-708-888-01

Device lens (LSV-140A) (TYPE Ⅰ)
8-848-704-01
Zoom lens (VCL-5412WA) (TYPE Ⅱ)
1-547-716-11

M905 (TYPE Ⅰ)
Focus motor assembly
1-698-364-01
M908 (TYPE Ⅱ)
Focus motor assembly
3-708-889-01

M902
Capstan motor (SCE-0101A)
8-835-477-12

M906 (TYPE Ⅰ)
Zoom motor assembly
1-698-363-01
M909 (TYPE Ⅱ)
Zoom motor assembly
3-708-887-01

M901
Drum assembly

9-973-560-11

Sony Corporation
Personal Video Group

English
94C0938-1
Printed in Japan
© 1994. 3
Published by CV Quality Engineering DIV.

## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
**(In addition to this , the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ○ : Through hole .

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ⊡∿ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.
- ━━ : B+ Line.
- ‐ ‐ ‐ : B– Line.
- ⇨ : IN/OUT direction of (+, – ) B LINE.
- Circled numbers refer to waveforms.

| Note: | Note: |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

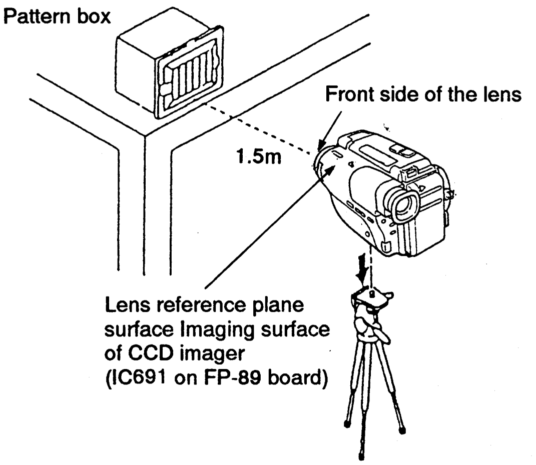
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

**(CAMERA block)**

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.
  Readings are taken with a digital multimeter (DC 10MΩ ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Front side of the lens
1.5m
Lens reference plane surface Imaging surface of CCD imager (IC691 on FP-89 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

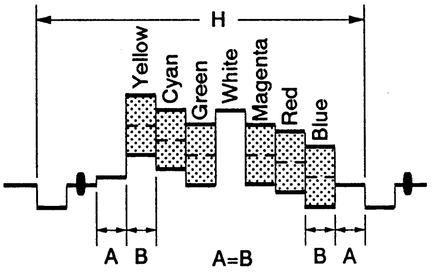


Fig. a (Video output terminal output waveform)

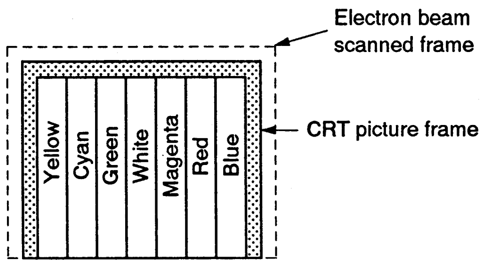


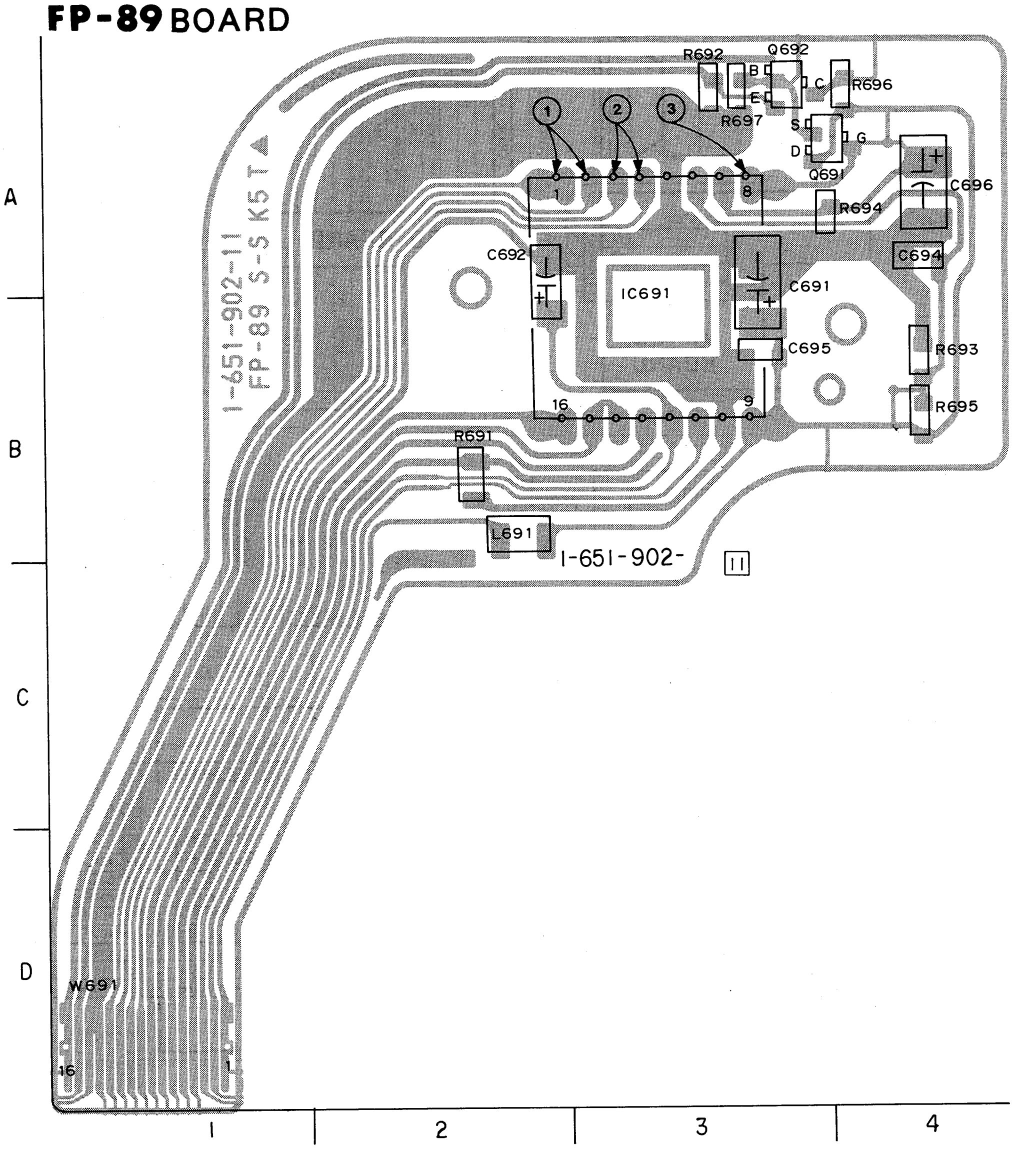
Fig. b (Picture on monitor TV)

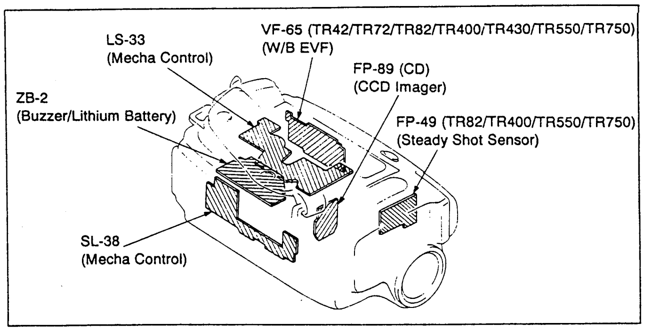
**(VIDEO, SERVO/SYSTEM CONTROL, AUDIO, LCD CONTROL)**

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ ).
- Voltage variations may be noted due to normal production tolerances.

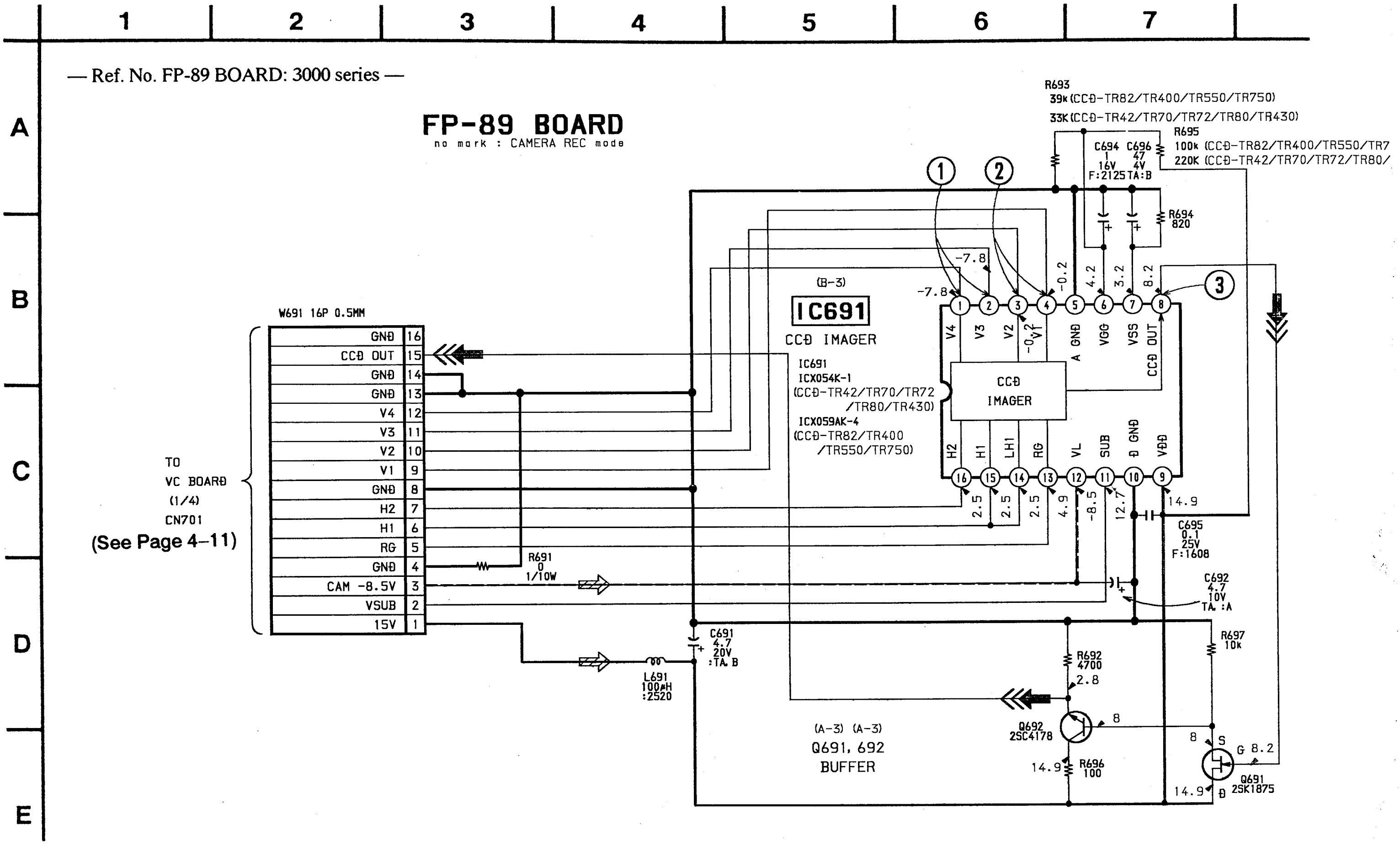
## FP-89 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. FP-89 BOARD: 3000 series —

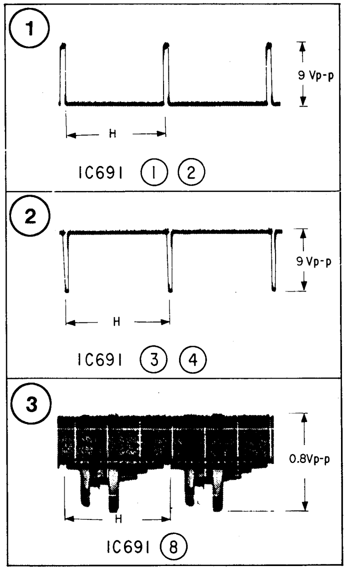

FP-89 BOARD
R692
Q692
B
E
C
R696
①
②
③
R697
S
D
G
Q691
C696
1
8
R694
C694
C692
IC691
C691
C695
R693
R695
16
9
R691
L691
1-651-902-
11
1-651-902-11
FP-89 S-5 K5 T
W691
16
1
A
B
C
D
1
2
3
4


LS-33
(Mecha Control)
VF-65 (TR42/TR72/TR82/TR400/TR430/TR550/TR750)
(W/B EVF)
FP-89 (CD)
(CCD Imager)
ZB-2
(Buzzer/Lithium Battery)
FP-49 (TR82/TR400/TR550/TR750)
(Steady Shot Sensor)
SL-38
(Mecha Control)

## FP-89 (CCD IMAGER) SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
A
B
C
D
E
— Ref. No. FP-89 BOARD: 3000 series —
FP-89 BOARD
no mark : CAMERA REC mode
R693
39k (CCD-TR82/TR400/TR550/TR750)
33K (CCD-TR42/TR70/TR72/TR80/TR430)
R695
100k (CCD-TR82/TR400/TR550/TR7
220K (CCD-TR42/TR70/TR72/TR80/
C694 1 16V F:2125
C696 47 4V TA:B
R694 820
①
②
③
-7.8
-7.8
-0.2
4.2
3.2
8.2
(B-3)
IC691
CCD IMAGER
IC691
ICX054K-1
(CCD-TR42/TR70/TR72/TR80/TR430)
ICX059AK-4
(CCD-TR82/TR400/TR550/TR750)
V4
V3
V2
-0.2 VT
A GND
VGG
VSS
CCD OUT
CCD IMAGER
H2
H1
LH1
RG
VL
SUB
D GND
VDD
2.5
2.5
2.5
4.9
-8.5
12.7
14.9
W691 16P 0.5MM
GND 16
CCD OUT 15
GND 14
GND 13
V4 12
V3 11
V2 10
V1 9
GND 8
H2 7
H1 6
RG 5
GND 4
CAM -8.5V 3
VSUB 2
15V 1
TO VC BOARD (1/4) CN701
(See Page 4-11)
R691 0 1/10W
C695 0.1 25V F:1608
C692 4.7 10V TA:A
C691 4.7 20V :TA B
L691 100µH :2520
R697 10k
R692 4700
2.8
8
8
Q692 2SC4178
R696 100
14.9
(A-3) (A-3)
Q691, 692
BUFFER
S
G 8.2
D
14.9
Q691 2SK1875

**FP-89** BOARD



- **SIGNAL PATH**

| | VIDEO SIGNAL | | |
|---|---|---|---|
| | CHROMA | Y | Y/CHROMA |
| REC | | | ➡ |
| PB | | | |

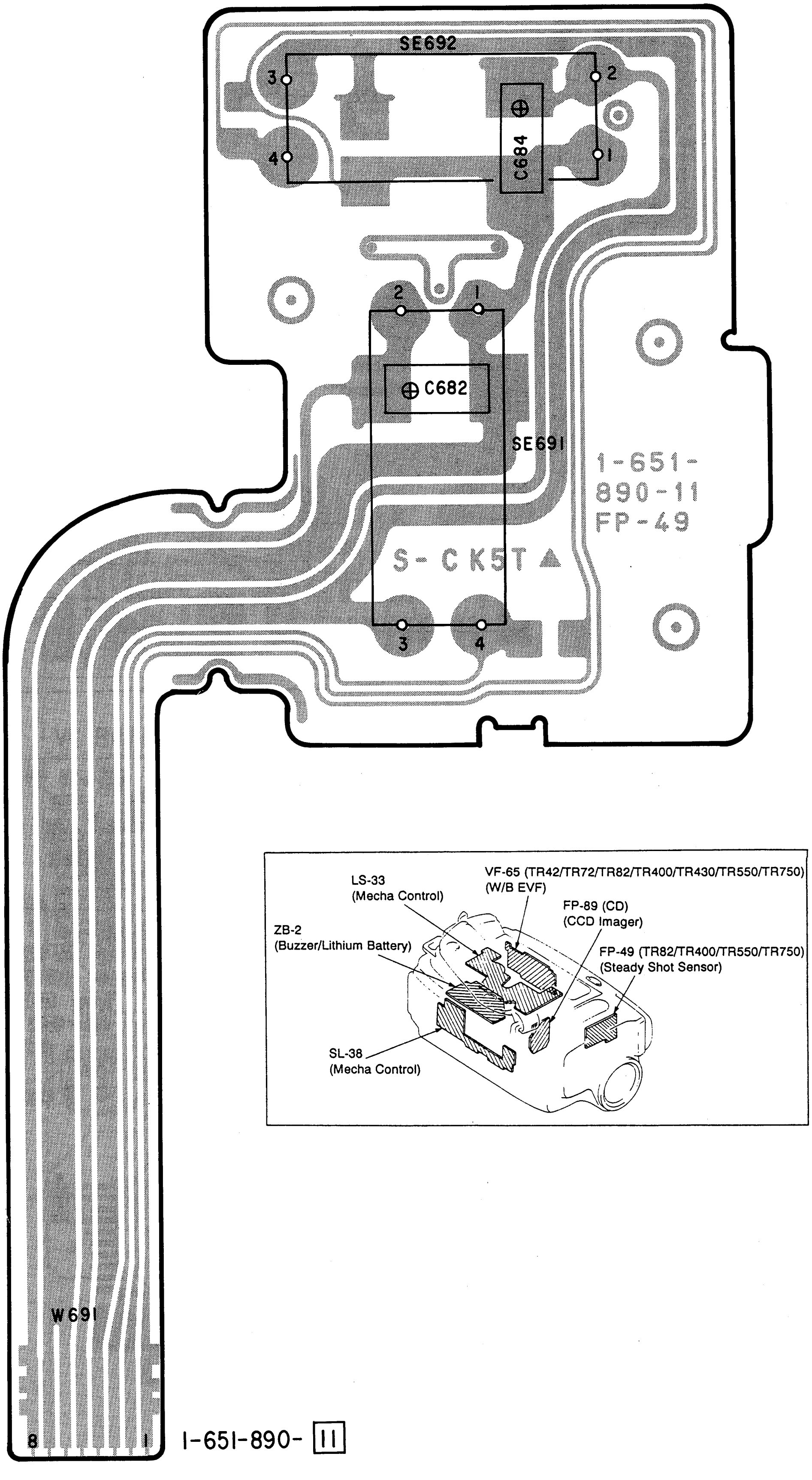
### Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC691 on FP-89 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC602 on VC board), and also written on the CCD data label put on the shield case (upper) of the DD board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted FP-89 board supplied as the repair parts.
  When replacing the FP-89 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

## FP-49 (STEADY SHOT SENSOR) PRINTED WIRING BOARD (TR82/TR400/TR550/TR750)

— Ref. No. FP-49 BOARD: 3000 series —

**FP-49** BOARD

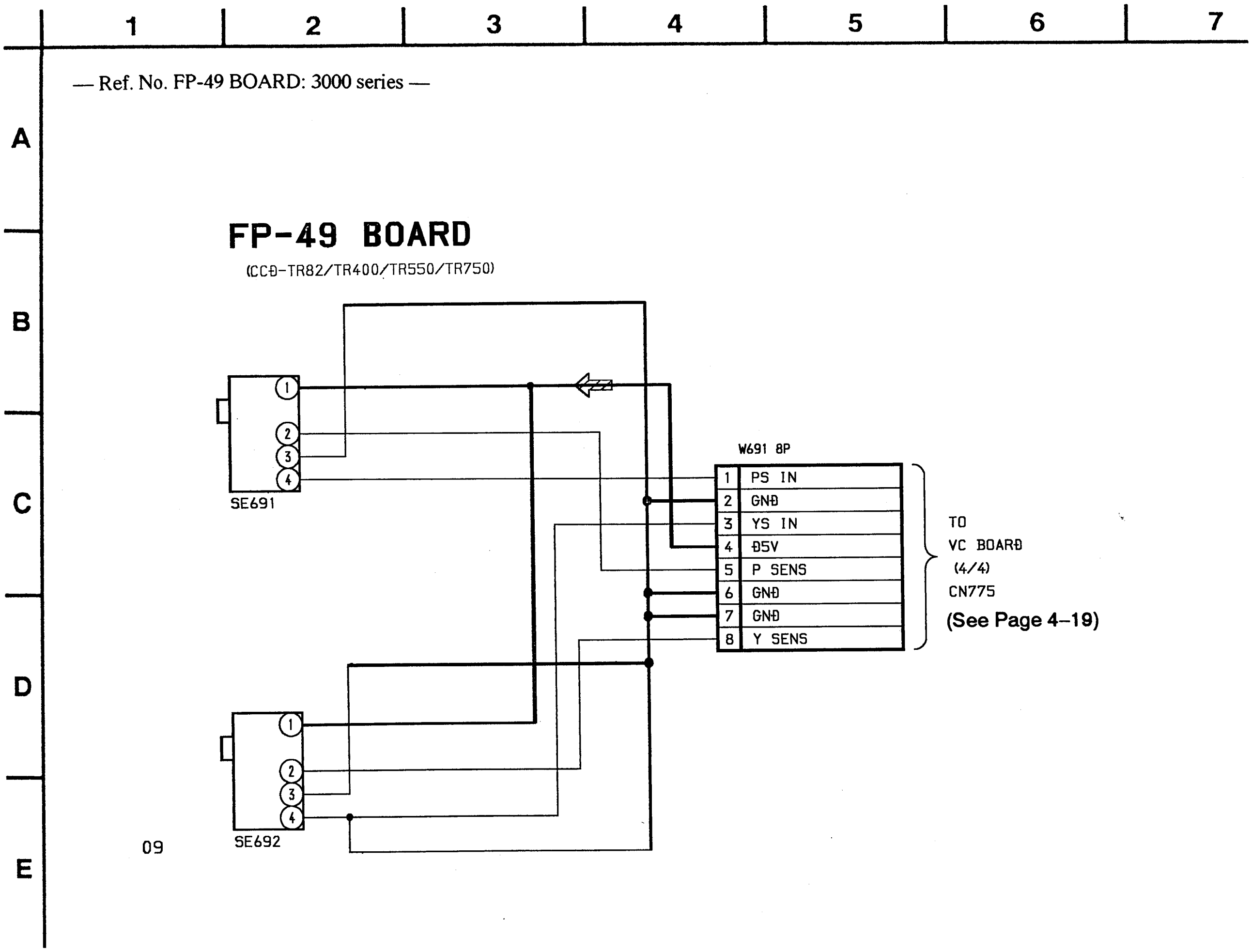

SE692
3
2
4
1
C684
2
1
C682
SE691
1-651-
890-11
FP-49
S-CK5T ▲
3
4
W691
8
1
1-651-890-11

09

LS-33
(Mecha Control)
VF-65 (TR42/TR72/TR82/TR400/TR430/TR550/TR750)
(W/B EVF)
FP-89 (CD)
(CCD Imager)
ZB-2
(Buzzer/Lithium Battery)
FP-49 (TR82/TR400/TR550/TR750)
(Steady Shot Sensor)
SL-38
(Mecha Control)

## FP-49 (STEADY SHOT SENSOR) SCHEMATIC DIAGRAM (TR82/TR400/TR550/TR750)

— Ref. No. FP-49 BOARD: 3000 series —


1
2
3
4
5
6
7
A
B
C
D
E
FP-49 BOARD
(CCD-TR82/TR400/TR550/TR750)
SE691
1
2
3
4
W691 8P
1 PS IN
2 GND
3 YS IN
4 D5V
5 P SENS
6 GND
7 GND
8 Y SENS
TO
VC BOARD
(4/4)
CN775
(See Page 4–19)
SE692
1
2
3
4
09

# SECTION 5
# REPAIR PARTS LIST

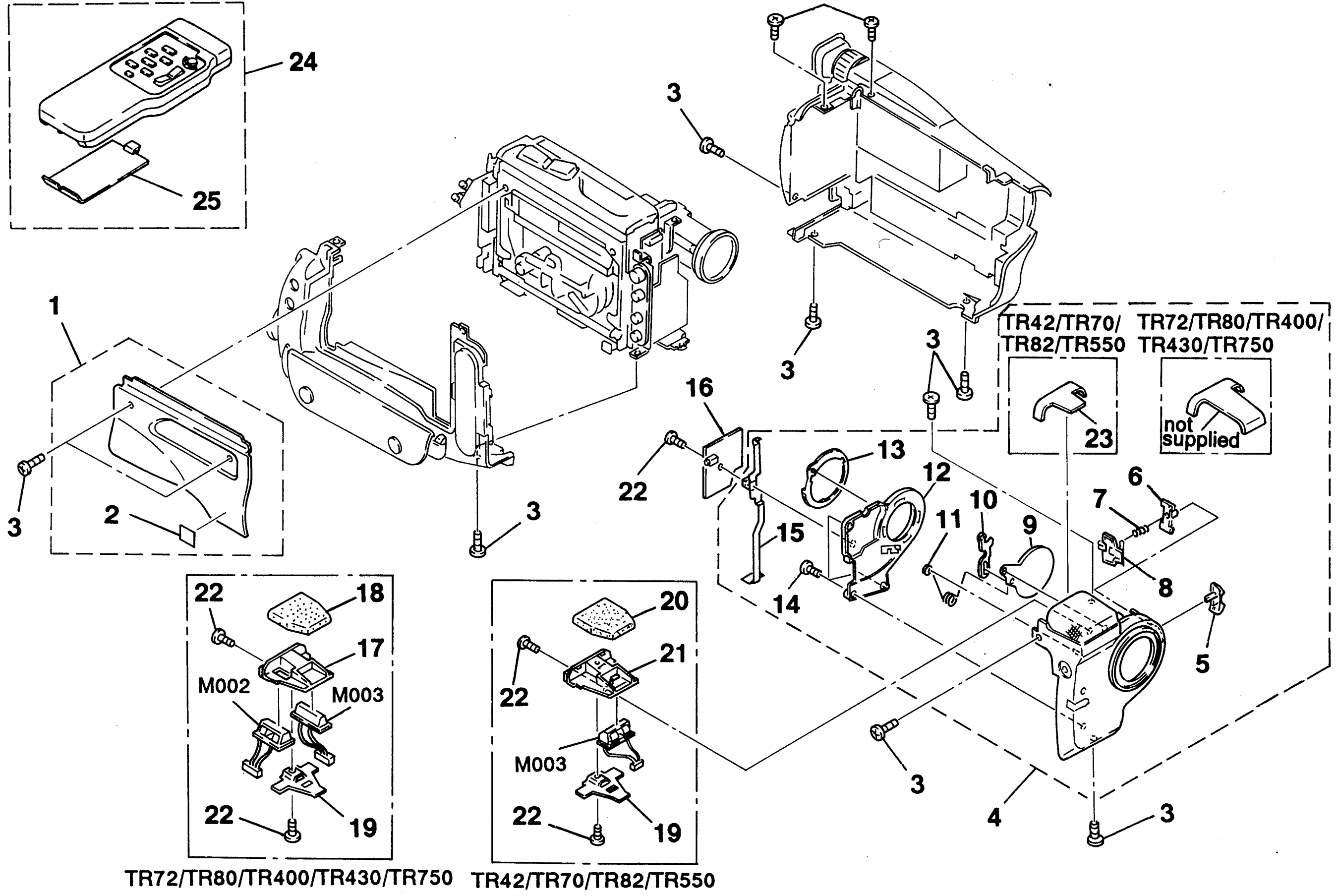
## 5-1. EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

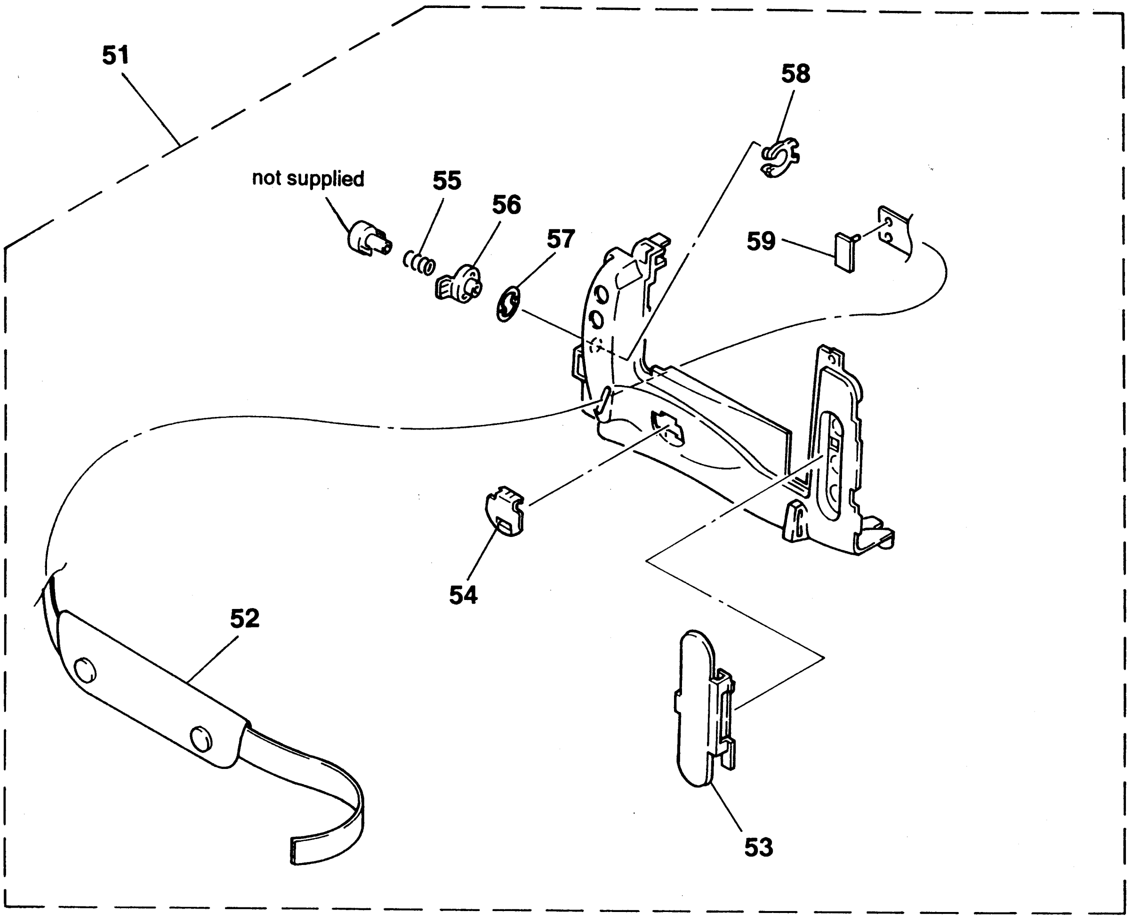
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

### 5-1-1. F PANEL BLOCK ASSEMBLY



| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3943-920-1 | LID ASSY, CASSETTE (TR72) | |
| 1 | X-3943-927-1 | LID ASSY, CASSETTE (TR82) | |
| 1 | X-3944-005-1 | LID ASSY, CASSETTE (TR80) | |
| 1 | X-3944-006-1 | LID ASSY, CASSETTE (TR70) | |
| 1 | X-3944-078-1 | LID ASSY, CASSETTE (TR42) | |
| 1 | X-3944-084-1 | LID ASSY, CASSETTE (TR550) | |
| 1 | X-3944-085-1 | LID ASSY, CASSETTE (TR430) | |
| 1 | X-3944-086-1 | LID ASSY, CASSETTE (TR400) | |
| 1 | X-3944-088-1 | LID ASSY, CASSETTE (TR750) | |
| 2 | 3-703-710-41 | STICKER, SONY SYMBOL (12) | |
| 3 | 3-719-381-01 | SCREW (M2X4) | |
| 4 | X-3943-922-1 | PANEL ASSY, F (TR72/TR80/TR430) | |
| 4 | X-3943-925-1 | PANEL ASSY, F (TR82/TR550) | |
| 4 | X-3944-035-1 | PANEL ASSY, F (TR70) | |
| 4 | X-3944-062-1 | PANEL ASSY, F (TR400/TR750) | |
| 4 | X-3944-063-1 | PANEL ASSY, F (TR42) | |
| 5 | 3-958-614-01 | SWITCH, POWER | |
| 6 | 3-958-633-01 | BUTTON, POWER PUSH | |
| 7 | 3-303-973-01 | SPRING, COMPRESSION | |
| * 8 | 3-958-609-01 | PLATE, FUNCTION, POWER | |
| 9 | 3-958-616-01 | COVER, LENS | |
| * 10 | 3-958-632-01 | LEVER, LC | |
| 11 | 3-958-637-01 | SPRING, LC | |
| * 12 | 3-958-605-01 | RETAINER, LC | |
| * 13 | 3-958-615-01 | RING, DRIVING | |
| 14 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| * 15 | 3-958-953-01 | PLATE, GROUNT, MA | |
| * 16 | A-7063-956-A | MA-199 BOARD, COMPLETE (TR42/TR70/TR82/TR550) | |
| * 16 | A-7063-962-A | MA-179 BOARD, COMPLETE (TR72/TR80/TR400/TR430/TR750) | |
| * 17 | X-3944-205-1 | HOLDER ASSY (S), MICROPHONE (TR72/TR80/TR400/TR430/TR750) | |
| * 18 | 3-958-951-01 | CUSHION (S), MICROPHONE (TR72/TR80/TR400/TR430/TR750) | |
| * 19 | 3-958-952-01 | PLATE, FIXED, MICROPHONE | |
| * 20 | 3-958-954-01 | CUSHION (M), MICROPHONE (TR42/TR70/TR82/TR550) | |
| * 21 | X-3944-206-1 | HOLDER ASSY (M), MICROPHONE (TR42/TR70/TR82/TR550) | |
| 22 | 3-948-339-01 | SCREW (BTP)(2X5), HEAD | |
| 23 | 3-958-610-01 | CAP (M), MICROPHONE(TR42/TR70/TR82/TR550) | |
| 24 | 1-467-574-21 | REMOTE COMMANDER (RMT-708) | |
| 25 | 3-958-131-01 | LID, BATTERY CASE (for RMT-708) | |
| M002 | 1-542-162-11 | MICROHONE UNIT | |

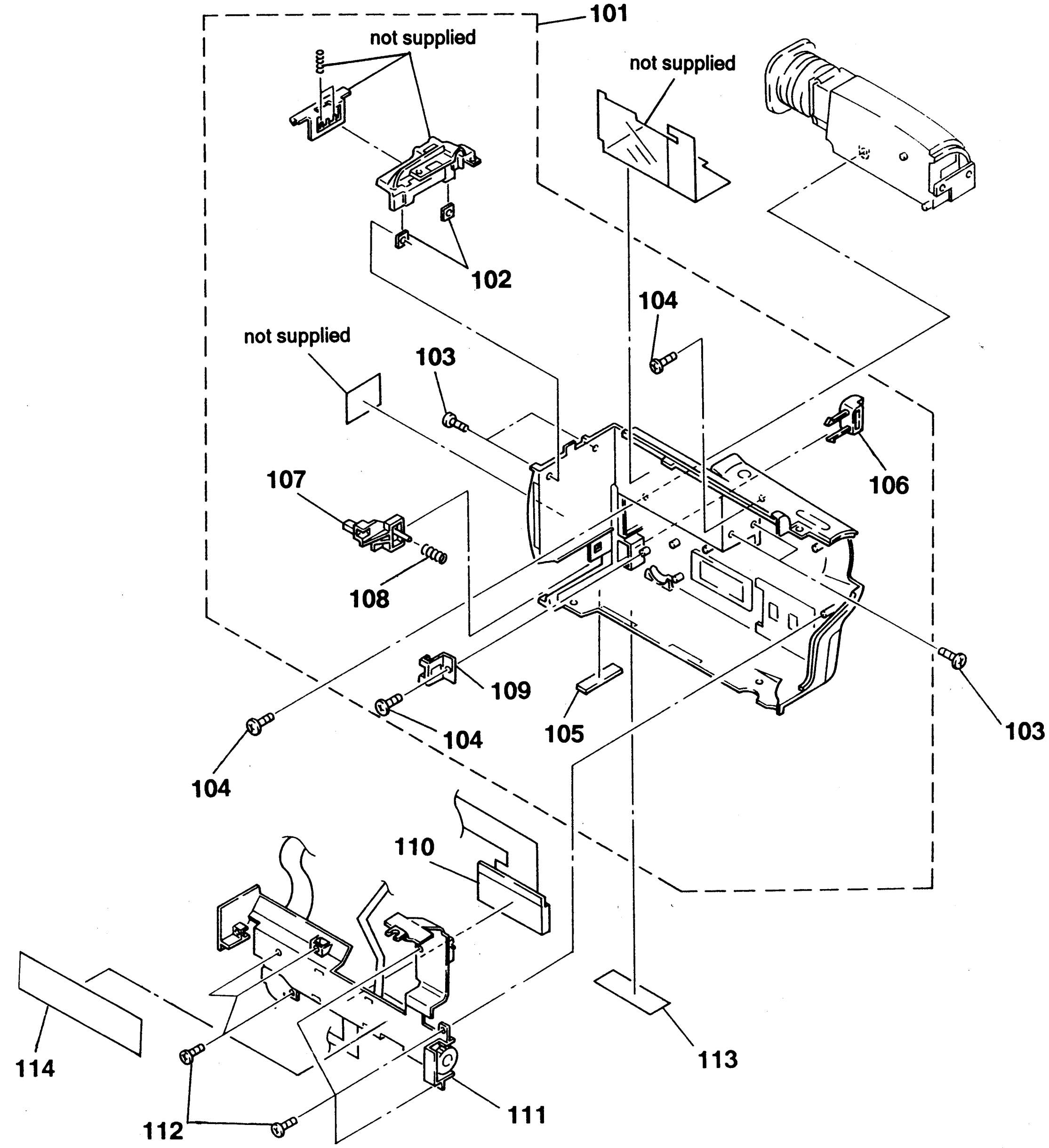
## 5-1-2. CABINET (L) BLOCK ASSEMBLY



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3943-923-1 | CABINET (L) ASSY (TR72/TR80/TR430) | |
| 51 | X-3943-924-1 | CABINET (L) ASSY (TR42/TR70/TR82/TR550) | |
| 51 | X-3944-037-1 | CABINET (L) ASSY (TR400/TR750) | |
| 52 | 3-736-807-01 | BELT, GRIP | |
| 53 | 3-958-606-01 | COVER, JACK | |
| 54 | 3-958-608-01 | LID, LITHIUM POWER | |

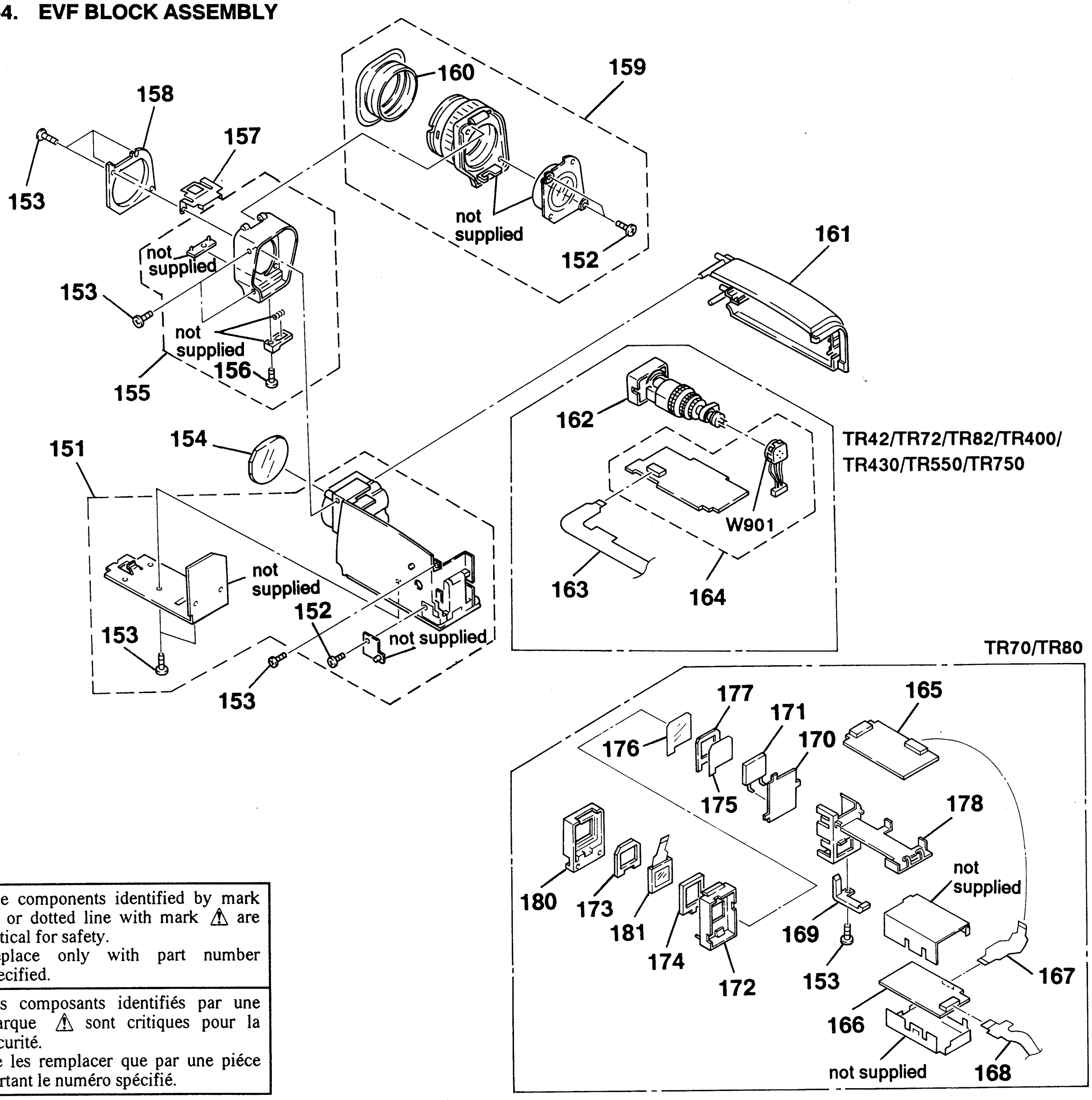
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 55 | 3-578-221-00 | SPRING, COMPRESSION | |
| 56 | 3-942-985-01 | KNOB, STAND-BY | |
| 57 | 3-736-364-01 | SPRING | |
| 58 | 3-942-953-01 | HOLDER, STAND-BY KNOB | |
| 59 | 3-942-895-01 | STOPPER, BELT | |

### 5-1-3. CABINET (R) BLOCK ASSEMBLY



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | X-3943-921-1 | CABINET (R) ASSY (TR82) | |
| 101 | X-3943-926-1 | CABINET (R) ASSY (TR72/TR80/TR430) | |
| 101 | X-3944-036-1 | CABINET (R) ASSY (TR70) | |
| 101 | X-3944-090-1 | CABINET (R) ASSY (TR42) | |
| 101 | X-3944-110-1 | CABINET (R) ASSY (TR550) | |
| 101 | X-3944-111-1 | CABINET (R) ASSY (H)(TR400) | |
| 101 | X-3944-113-1 | CABINET (R) ASSY (H)(TR750) | |
| 102 | 3-718-233-01 | NUT, PLATE | |
| 103 | 3-719-381-01 | SCREW (M2X4) | |
| 104 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 105 | 3-949-008-01 | SHEET, FOOT | |
| 106 | 3-958-618-01 | BUTTON, BATTERY RELEASE | |
| 107 | 3-958-620-01 | CLAW, BATTERY LOCK | |
| 108 | 3-426-508-00 | SPRING, COMPRESSION | |
| 109 | 3-958-650-01 | RETAINER, BATTERY RELEASE | |
| 110 | 1-810-535-11 | DISPLAY PANEL, LIQUID CRYSTAL (TR400/TR750) | |
| 111 | 1-467-676-11 | SWITCH BLOCK, CONTROL (CK) (TR42/TR82/TR550) | |
| 111 | 1-467-676-21 | SWITCH BLOCK, CONTROL (CK) (TR70/TR72/TR80/TR430) | |
| 111 | 1-467-676-41 | SWITCH BLOCK, CONTROL (CK)(TR400/TR750) | |
| 112 | 3-948-339-01 | SCREW (BTP)(2X5), HEAD | |
| * 113 | 3-958-586-01 | LABEL, MODEL NUMBER (72)(TR72) | |
| * 113 | 3-958-638-01 | LABEL, MODEL NUMBER (82)(TR82) | |
| * 113 | 3-958-973-01 | LABEL, MODEL NUMBER (80)(TR80) | |
| * 113 | 3-958-974-01 | LABEL, MODEL NUMBER (70)(TR70) | |
| * 113 | 3-959-117-01 | LABEL, MODEL NUMBER (42)(TR42) | |
| * 113 | 3-959-123-01 | LABEL, MODEL NUMBER (550)(TR550) | |
| * 113 | 3-959-124-01 | LABEL, MODEL NUMBER (430)(TR430) | |
| * 113 | 3-959-126-01 | LABEL, MODEL NUMBER (400)(TR400) | |
| * 113 | 3-959-129-01 | LABEL, MODEL NUMBER (750)(TR750) | |
| * 114 | 3-959-615-01 | CUSHION (CK) | |

## 5-1-4. EVF BLOCK ASSEMBLY

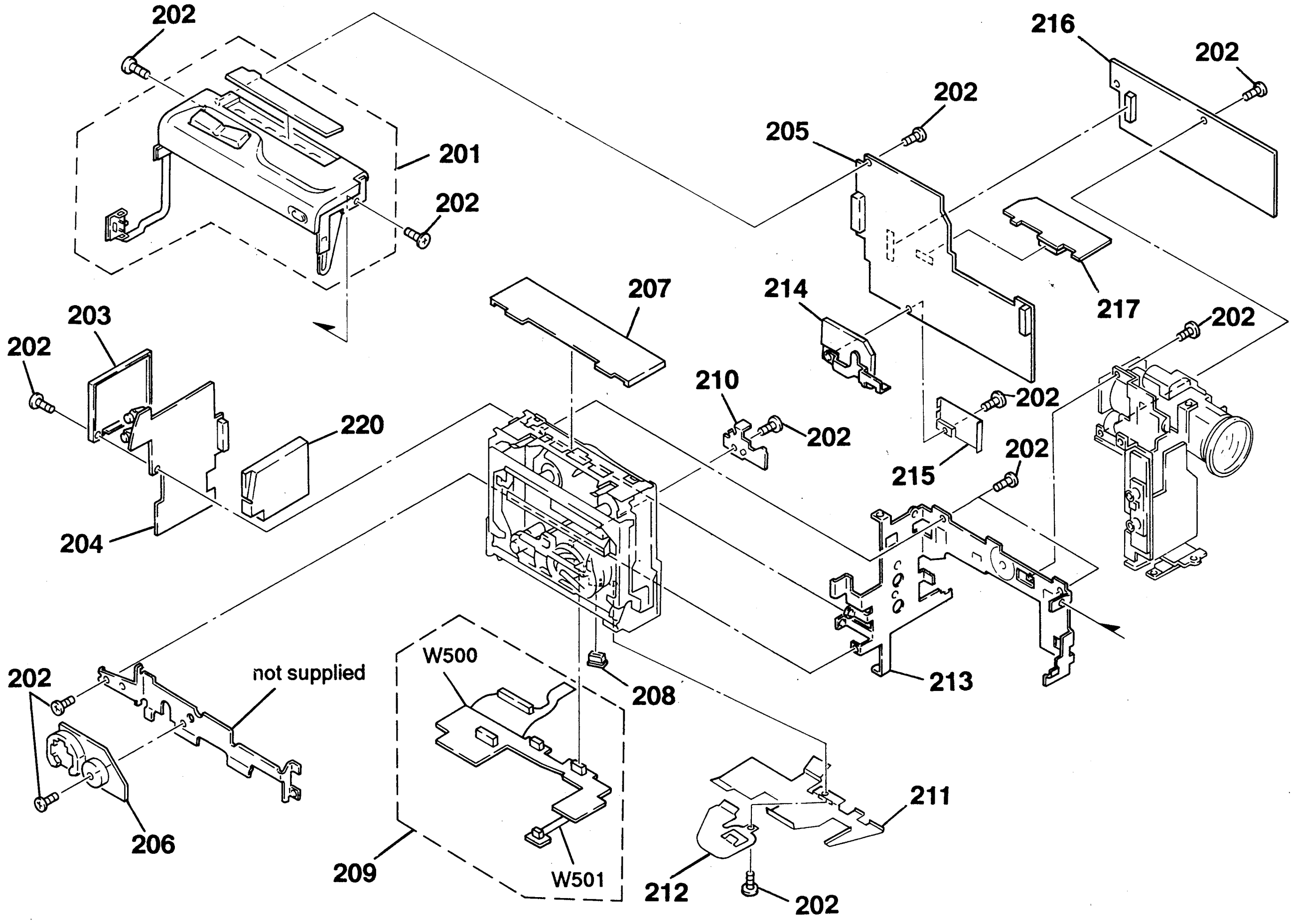

159
160
158
157
153
not supplied
152
161
not supplied
153
not supplied
156
155
162
TR42/TR72/TR82/TR400/TR430/TR550/TR750
151
154
W901
not supplied
152
163
164
153
not supplied
153
TR70/TR80
177
165
171
176
170
175
178
not supplied
180
173
181
169
174
172
153
167
166
not supplied
168

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

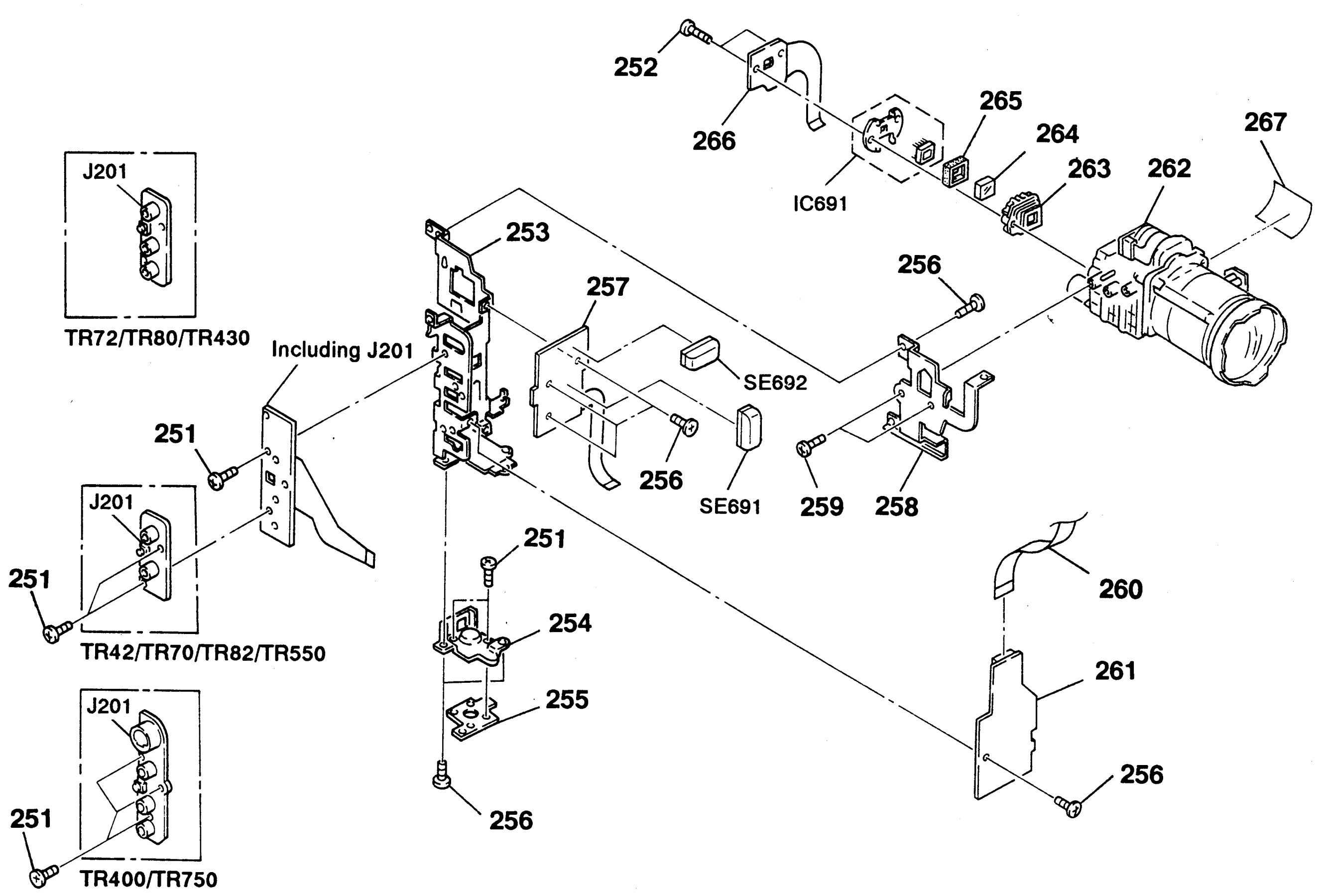
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | X-3943-930-1 | CABINET (L) ASSY, EVF (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |
| 151 | X-3944-004-1 | CABINET (L) ASSY, EVF (TR70/TR80) | |
| 152 | 3-713-791-51 | SCREW (M1.7X3.5), TAPPING, P2 | |
| 153 | 3-948-339-01 | SCREW (BTP)(2X5), HEAD | |
| 154 | 3-958-627-01 | LENS (1), VF | |
| 155 | A-7082-596-A | HOLDER (1) BLOCK ASSY, FINDER (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |
| 155 | A-7082-625-A | HOLDER (1) BLOCK ASSY, FINDER (TR70/TR80) | |
| 156 | 3-958-217-01 | SCREW (M2) | |
| 157 | 3-958-629-01 | SPRING, LEAF | |
| 158 | 3-958-628-01 | HOLDER (1), LENS | |
| 159 | A-7082-595-A | HOLDER (2) BLOCK ASSY, FINDER | |
| 160 | 3-958-597-01 | EYE CUP | |
| 161 | 3-958-592-01 | CABINET (R), EVF (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |
| 161 | 3-958-592-11 | CABINET (R), EVF (TR70/TR80) | |
| ⚠162 | 1-452-673-11 | CRT ASSY (M01KXX90WB) (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |
| 163 | 1-651-894-11 | FP-86 FLEXIBLE BOARD (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |
| * 164 | A-7063-957-A | VF-65 BOARD, COMPLETE (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |
| * 165 | A-7066-011-A | VF-67 BOARD, COMPLETE (TR70/TR80) | |
| * 166 | A-7066-010-A | VF-66 BOARD, COMPLETE (TR70/TR80) | |
| 167 | 1-651-903-11 | FP-92 FLEXIBLE BOARD (TR70/TR80) | |
| 168 | 1-651-893-11 | FP-85 FLEXIBLE BOARD (TR70/TR80) | |
| 169 | 3-958-969-01 | CHIP (LCD), TALLY (TR70/TR80) | |
| * 170 | A-7056-012-A | LB-35 BOARD, COMPLETE (TR70/TR80) | |
| 171 | 1-517-325-11 | LANP, FLUORESCENT (0.55 INCH)(TR70/TR80) | |
| 172 | 3-958-962-01 | COVER, BL (TR70/TR80) | |
| * 173 | 3-958-963-01 | CUSHION (1)(TR70/TR80) | |
| * 174 | 3-958-964-01 | CUSHION (2)(TR70/TR80) | |
| 175 | 3-958-965-01 | PLATE, CONDENCE, BL (TR70/TR80) | |
| 176 | 3-958-966-01 | ILLUMINATOR, BL (TR70/TR80) | |
| * 177 | 3-958-967-01 | CUSHION (3)(TR70/TR80) | |
| 178 | 3-958-968-01 | HOLDER (TR70/TR80) | |
| 180 | 3-958-975-01 | COVER, LCD (TR70/TR80) | |
| 181 | 8-753-015-00 | LCX005AK-1 (TR70/TR80) | |
| W901 | 1-540-019-21 | SOCKET ASSY, CRT (TR42/TR72/TR82/TR400/TR430/TR550/TR750) | |

## 5-1-5. MAIN BOARDS ASSEMBLY



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | 1-467-649-12 | SWITCH BLOCK, CONTROL (FK) (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| 201 | 1-467-649-31 | SWITCH BLOCK, CONTROL (FK)(TR400/TR750) | |
| 202 | 3-713-786-21 | SCREW (M2X3) | |
| * 203 | 3-958-925-01 | CASE (MAIN), SHIELD, DD | |
| * 204 | A-7063-954-A | DD-66 BOARD, COMPLETE (TR42/TR82/TR550) | |
| * 204 | A-7063-960-A | DD-60 BOARD, COMPLETE (TR72/TR400/TR430/TR750) | |
| * 204 | A-7066-006-A | DD-66 BOARD, COMPLETE (TR70) | |
| * 204 | A-7066-009-A | DD-60 BOARD, COMPLETE (TR80) | |
| * 205 | A-7063-953-A | VS-112 BOARD, COMPLETE (TR82) | |
| * 205 | A-7063-959-A | VS-104 BOARD, COMPLETE (TR72) | |
| * 205 | A-7066-008-A | VS-104 BOARD, COMPLETE (TR80) | |
| * 205 | A-7066-019-A | VS-112 BOARD, COMPLETE (TR70) | |
| * 205 | A-7066-047-A | VS-112 (LL) BOARD, COMPLETE (TR42) | |
| * 205 | A-7066-079-A | VS-104 (H) BOARD, COMPLETE (TR400) | |
| * 205 | A-7066-085-A | VS-112 BOARD, COMPLETE (TR550) | |
| * 205 | A-7066-086-A | VS-104 BOARD, COMPLETE (TR430) | |
| * 205 | A-7066-134-A | VS-104 (H) BOARD, COMPLETE (TR750) | |
| * 206 | A-7072-002-A | ZB-2 BOARD, COMPLETE | |
| 207 | 3-958-341-01 | COVER, LS | |
| 208 | 1-691-471-11 | CONNECTOR, TRANSLATION 11P | |
| * 209 | A-7072-000-A | SL-38 BOARD, COMPLETE | |
| * 210 | 3-958-667-01 | FRAME (B) | |
| * 211 | 3-958-928-01 | PLATE, SHIELD, RP | |
| 212 | 1-651-891-11 | FP-52 FLEXIBLE BOARD (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| 212 | 1-651-892-11 | FP-53 FLEXIBLE BOARD (TR400/TR750) | |
| * 213 | 3-958-345-01 | FRAME (U) | |
| * 214 | X-3943-976-1 | SHIELD (MAIN) ASSY, RP | |
| * 215 | 3-958-924-01 | CASE (LID)), SHIELD, RP | |
| * 216 | A-7063-955-A | VC-145 BOARD, COMPLETE (TR82) | |
| * 216 | A-7063-961-A | VC-138 BOARD, COMPLETE (TR72/TR430) | |
| * 216 | A-7066-007-A | VC-145 BOARD, COMPLETE (TR70) | |
| * 216 | A-7066-018-A | VC-138 BOARD, COMPLETE (TR80) | |
| * 216 | A-7066-080-A | VC-138 BOARD, COMPLETE (TR400/TR750) | |
| * 216 | A-7066-084-A | VC-145 BOARD, COMPLETE (TR42) | |
| * 216 | A-7066-088-A | VC-145 BOARD, COMPLETE (TR550) | |
| 217 | A-7066-078-A | HE-14 BOARD, COMPLETE (TR400/TR750) | |
| 220 | X-3944-169-1 | SHIELD (LID) ASSY, DD | |
| W500 | 1-651-889-11 | FP-48 (SL) FLEXIBLE BOARD | |
| W501 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |

## 5-1-6. CCD BLOCK ASSEMBLY


252
266
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267
263
262
IC691
J201
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TR72/TR80/TR430
Including J201
SE692
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SE691
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258
J201
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251
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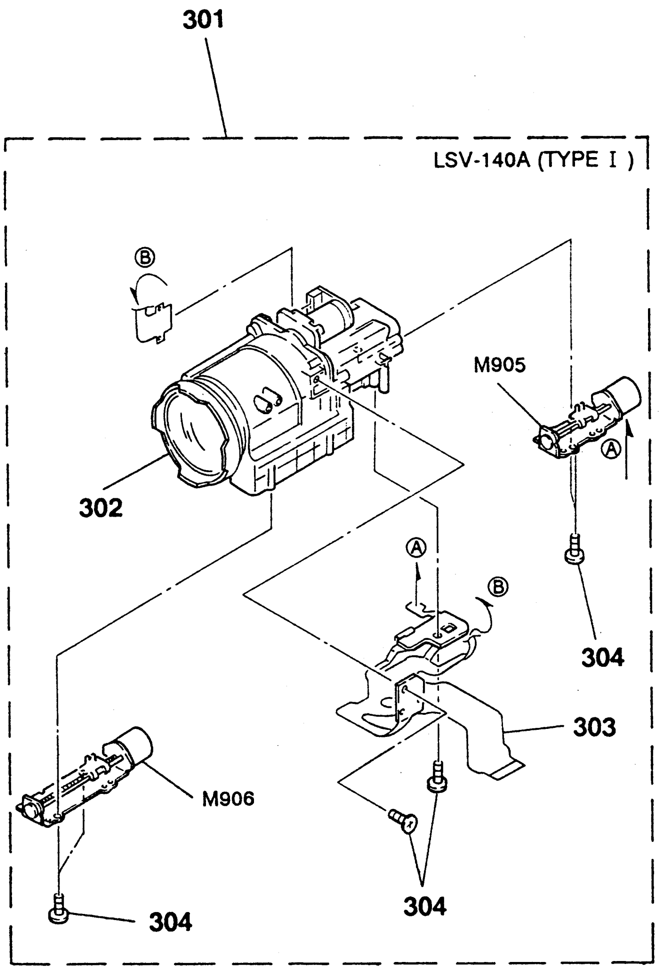
254
TR42/TR70/TR82/TR550
261
J201
255
256
251
256
TR400/TR750

Be sure to read "Note on the CCD Imager replacement" on page 4–6 when changing the CCD imager.

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| 251 | 3-719-381-01 | SCREW (M2X4) | |
| 252 | 3-947-268-01 | SCREW (B TIGHT)(2), TAPPING | |
| * 253 | 3-958-587-01 | FRAME (PJ) | |
| 254 | 3-958-310-11 | HOLDER, TRIPOD | |
| 255 | 3-958-286-01 | SHEET METAL, TRIPOD | |
| 256 | 3-713-786-21 | SCREW (M2X3) | |
| 257 | 1-651-890-11 | FP-49 FLEXIBLE BOARD | (TR82/TR400/TR550/TR750) |
| * 258 | 3-958-666-01 | FRAME (L) | |
| 259 | 3-948-339-01 | SCREW (BTP)(2X5), HEAD | |
| 260 | 1-765-361-11 | CABLE, FLAT (FFC-115) | (TR72/TR80/TR400/TR430/TR750) |
| 260 | 1-765-362-11 | CABLE, FLAT (FFC-134) | (TR42/TR70/TR82/TR550) |
| * 261 | A-7063-952-A | AU-169 BOARD, COMPLETE | (TR42/TR70/TR82/TR550) |
| * 261 | A-7063-958-A | AU-165 BOARD, COMPLETE | (TR72/TR80/TR400/TR430/TR750) |
| 262 | 1-547-716-11 | LENS, ZOOM (VCL-5412WA)(TYPE Ⅱ) | |
| 262 | 8-848-704-01 | DEVICE, LENS LSV-140A (TYPE I) | |
| 263 | 3-946-856-01 | ADAPTOR (H), CCD FITTING | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| 264 | 1-547-529-21 | FILTER BLOCK, OPTICAL | (TR82/TR400/TR550/TR750) |
| 264 | 1-547-558-21 | FILTER BLOCK,OPTICAL | (TR42/TR70/TR72/TR80/TR430) |
| 265 | 3-946-857-01 | RUBBER (S), SEAL | |
| * 266 | A-7072-004-A | FP-89 (CD) BOARD, COMPLETE | (TR82/TR400/TR550/TR750) |
| * 266 | A-7072-005-A | FP-89 (CD) BOARD, COMPLETE | (TR42/TR70/TR72/TR80/TR430) |
| * 267 | 3-959-368-01 | CUSHION, CABINET (R) | (TR400/TR430/TR550/TR750) |
| J201 | 1-537-731-11 | TERMINAL BOARD (TR42/TR70/TR82/TR550) | |
| J201 | 1-537-731-21 | TERMINAL BOARD (TR72/TR80/TR430) | |
| J201 | 1-537-731-31 | TERMINAL BOARD (TR400/TR750) | |
| IC691 | A-7030-368-A | CCD BLOCK ASSY (AUTO)(054 SERVICE) (CCD IMAGER) | (TR42/TR70/TR72/TR80/TR430) |
| IC691 | A-7030-373-A | CCD BLOCK ASSY (AUTO)(059V SERVICE) (CCD IMAGER) | (TR82/TR400/TR550/TR750) |
| SE691 | 1-810-024-31 | SENSOR, ANGULAR VELOCITY (PITCH) | (TR82/TR400/TR550/TR750) |
| SE692 | 1-810-024-41 | SENSOR, ANGULAR VELOCITY (YAW) | (TR82/TR400/TR550/TR750) |

## 5-1-7. ZOOM LENS ASSEMBLIES (LSV-140A) (VCL-5412WA)


301
LSV-140A (TYPE I)
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M905
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M906
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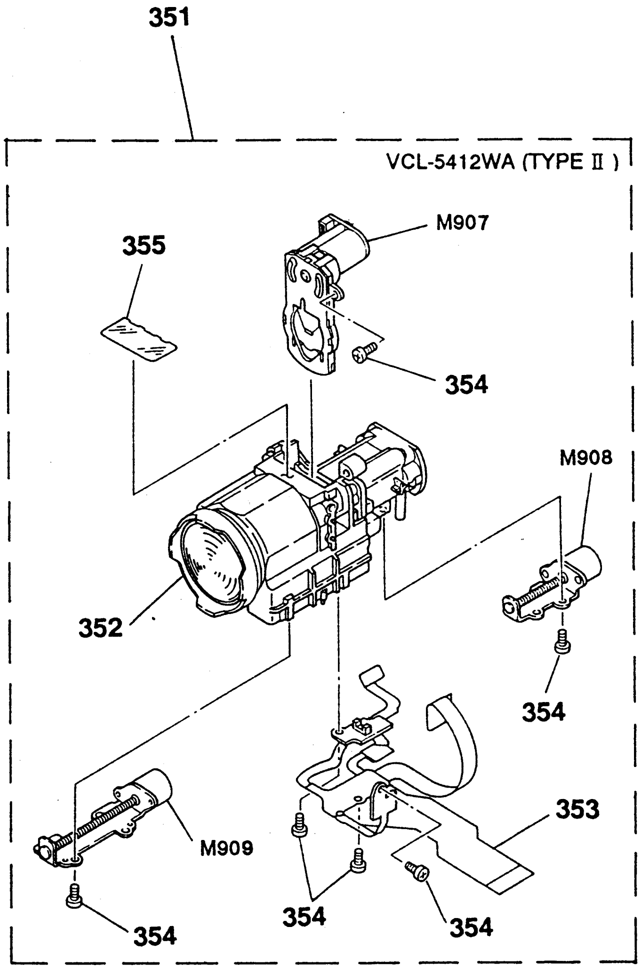
304


351
VCL-5412WA (TYPE Ⅱ)
M907
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M908
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M909
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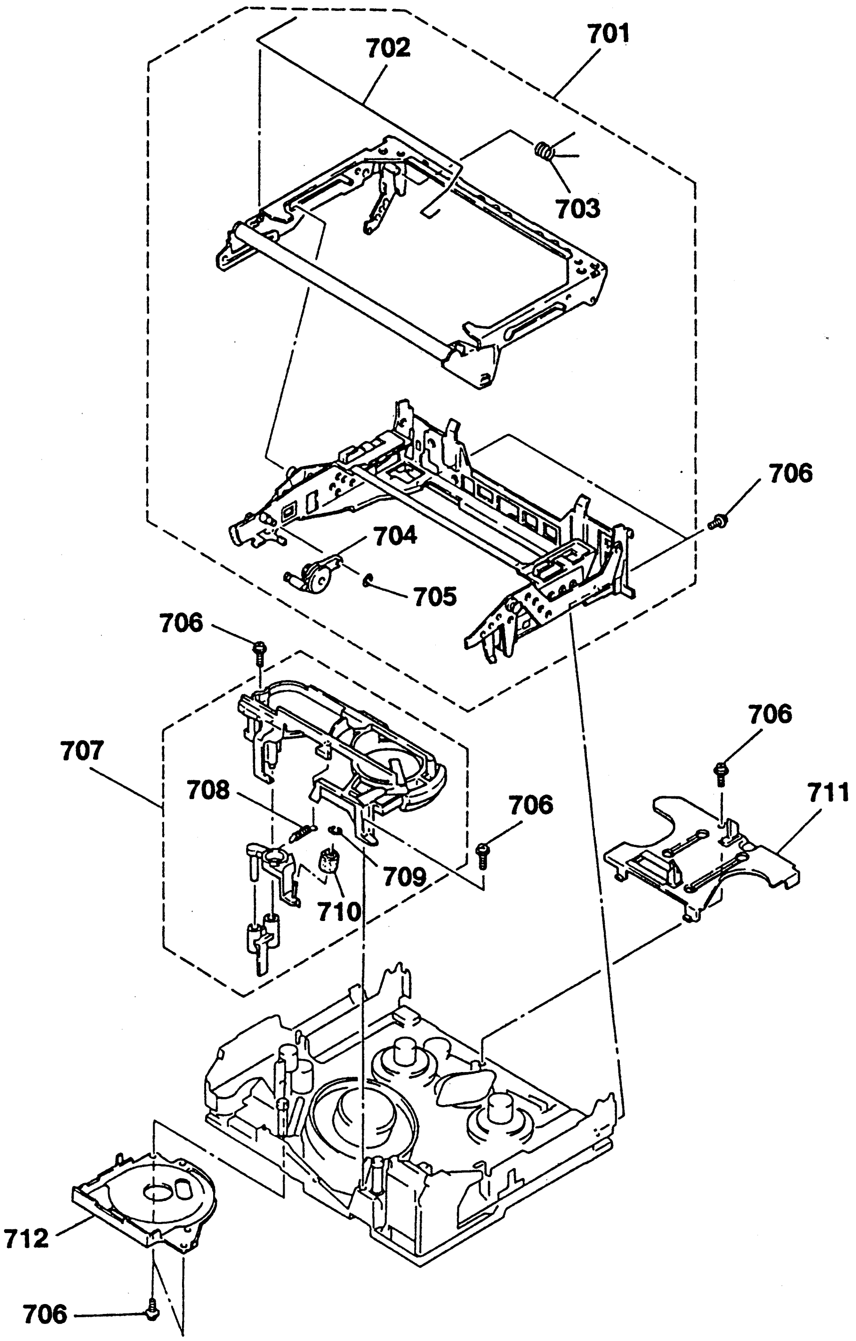
TYPE I

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | 8-848-704-01 | DEVICE, LENS (LSV-140A)(TYPE I) | |
| 302 | A-4910-598-A | DEVICE ASSY, LSV-140A (RP) | |
| 303 | A-4915-338-A | FLEXIBLE, MOUNT | |
| 304 | 3-713-791-41 | SCREW (M1.7X5), TAPPING, P2 | |
| M905 | 1-698-364-01 | MOTOR ASSY, FOCUS | |
| M906 | 1-698-363-01 | MOTOR ASSY, ZOOM | |

TYPE Ⅱ

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 351 | 1-547-716-11 | LENS, ZOOM (VCL-5412WA)(TYPEⅡ) | |
| 352 | 3-708-891-01 | DEVICE ASSY | |
| 353 | 3-708-890-01 | FLEXIBLE BOARD, MAIN | |
| 354 | 3-708-302-01 | SCREW (BT3 P1.7X4C) | |
| 355 | 3-708-886-01 | COVER, IG | |
| M907 | 3-708-888-01 | METER, IG | |
| M908 | 3-708-889-01 | MOTOR ASSY, FOCUS | |
| M909 | 3-708-887-01 | MOTOR ASSY, ZOOM | |

## 5-1-8. CASSETTE COMPARTMENT ASSEMBLY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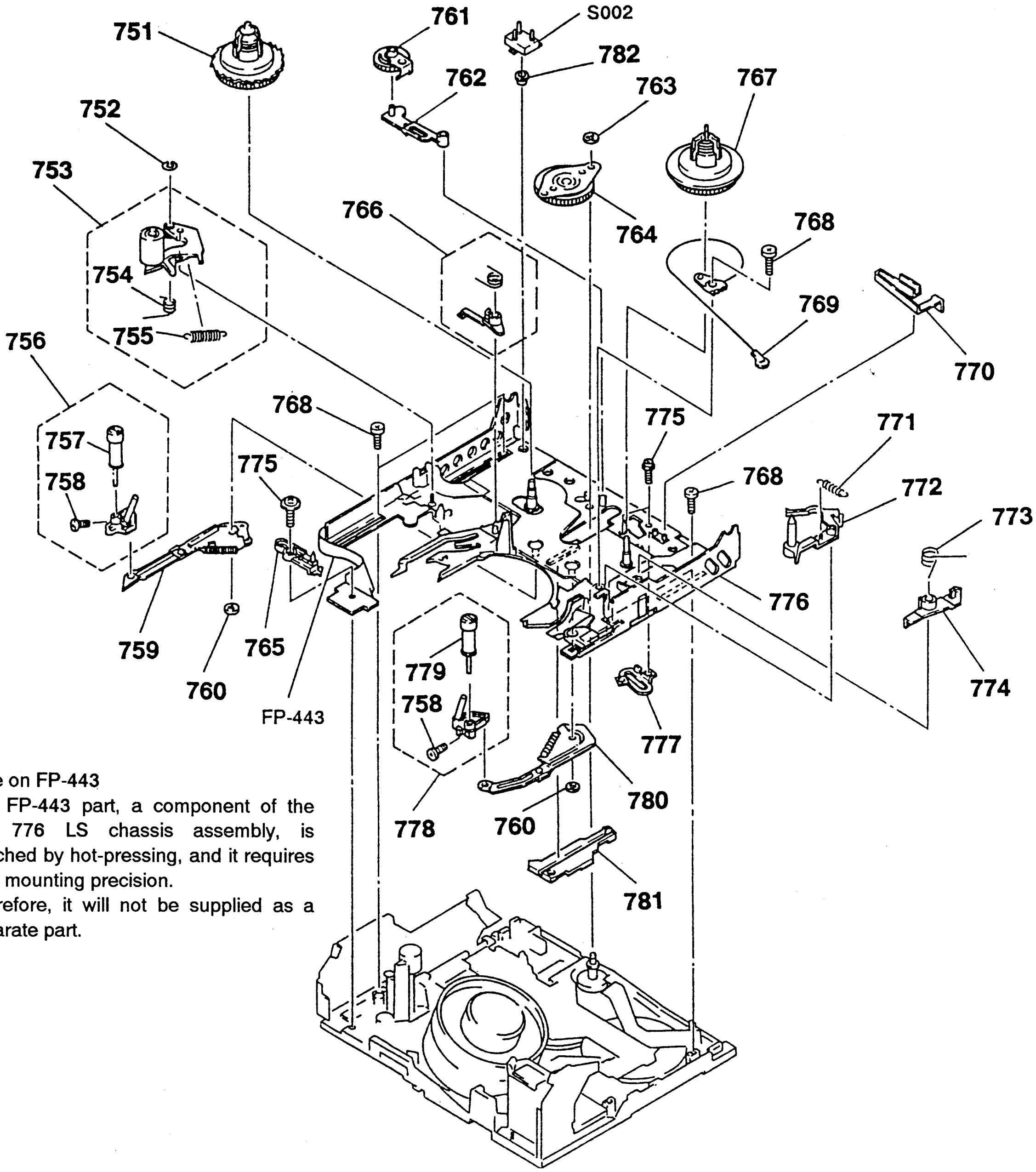
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 701 | A-7040-312-K | CASSETTE COMPARTMENT BLOCK ASSY | |
| 702 | 3-945-773-01 | BAR, TORSION | |
| 703 | 3-945-771-01 | SPRING, TORSION | |
| 704 | X-3941-287-2 | DAMPER ASSY | |
| 705 | 3-315-384-31 | WASHER, STOPPER | |
| 706 | 3-947-503-01 | SCREW (M1.4X2.5) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 707 | A-7040-309-A | PROTECT (BASE) BLOCK ASSY | |
| 708 | 3-945-760-01 | SPRING, TENSION | |
| 709 | 3-321-393-01 | WASHER, STOPPER | |
| 710 | X-3166-813-1 | ROLLER ASSY, HC | |
| 711 | X-3941-280-1 | RETAINER ASSY, GOOSENECK | |
| 712 | 3-945-733-01 | COVER, CAPSTAN | |

## 5-1-9. LS CHASSIS ASSEMBLY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S002
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FP-443
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Note on FP-443
The FP-443 part, a component of the No. 776 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| 751 | X-3941-274-1 | TABLE ASSY, REEL, T | |
| 752 | 3-331-007-21 | WASHER | |
| 753 | X-3941-271-5 | ARM ASSY, PINCH | |
| 754 | 3-945-743-01 | SPRING, TORSION | |
| 755 | 3-945-783-01 | SPRING, TENSION | |
| 756 | A-7040-307-A | GUIDE (BASE)(T) BLOCK ASSY | |
| 757 | X-3941-424-1 | ROLLER ASSY, TG6 | |
| 758 | 3-947-504-01 | SCREW (M1.2X2) | |
| 759 | X-3941-267-1 | ARM (T) ASSY, GUIDE | |
| 760 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 761 | X-3941-273-1 | SOFT ASSY, T | |
| 762 | 3-945-753-01 | ARM, T SOFT | |
| 763 | 3-726-829-01 | WASHER, STOPPER | |
| 764 | X-3941-279-5 | GEAR ASSY, GOOSENECK | |
| 765 | 3-947-644-01 | RETAINER, TG5 (BASE) | |
| 766 | A-7040-321-A | CLAW BLOCK ASSY, T HARD | |
| 767 | X-3943-676-1 | TABLE ASSY, S REEL | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| 768 | 3-945-756-01 | SCREW (M1.4X3) | |
| 769 | X-3941-277-1 | STRING BLOCK ASSY | |
| 770 | 3-945-801-01 | BRAKE, S SOFT | |
| 771 | 3-954-327-01 | SPRING, TENSION | |
| 772 | X-3941-276-1 | TG1 ASSY | |
| 773 | 3-945-752-01 | SPRING, TORSION | |
| 774 | 3-945-799-01 | BRAKE, S HARD | |
| 775 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 776 | X-3943-307-1 | CHASSIS ASSY, LS | |
| 777 | 3-945-784-01 | PLATE, CAM, LS | |
| 778 | A-7040-306-A | GUIDE (BASE)(S) BLOCK ASSY | |
| 779 | X-3941-269-1 | ROLLER ASSY, TG3 | |
| 780 | X-3941-266-1 | ARM (S) ASSY, GUIDE | |
| 781 | 3-945-837-01 | SLIDER, GL | |
| 782 | 3-949-881-01 | SLEEVE | |
| S002 | 1-572-987-11 | SWITCH, PUSH (3 KEY)<br>(REC PROOF, ME/MP, MP/MP-HG) | |

# SECTION 6
# INTERFACES • IC PIN

## 6-1. CAMERA CONTROL MICRO PROCESSOR PIN FUNCTION (VC BOARD IC602: SC424608 MC68HC11MA8FU)

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | VTR SI | I | Serial data input from mode control microprocessor (VS board IC503). |
| 2 | $\overline{\text{VTR SCK}}$ | I | Serial data transfer clock from/to mode control microprocessor. |
| 3 | $\overline{\text{CAM CS}}$ | I | Chip select signal from mode control microprocessor. |
| 4 | | | Not used. |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | PBV | I | V sync signal from servo/mechanism control microprocessor (VS board IC505). |
| 10 | | | Not used (connected to +3.6V). |
| 11 | | | |
| 12 | VDD | | +3.6V power supply. |
| 13 | VSS | | GND |
| 14 | $\overline{\text{CS TG}}$ | O | Chip select signal to timing generator (IC702). |
| 15 | | | Not used (connected to +3.6V). |
| 16 | START | O | Operation signal of IC705. Normally "L". "H" during operation. |
| 17 | WEN | I | Write enable signal from timing generator (IC702). Normally "H". |
| 18 | | | Not used. |
| 19 | $\overline{\text{CS VST}}$ | O | Chip select signal to steady shot control microprocessor (IC777). |
| 20 | $\overline{\text{CS CORE}}$ | O | Chip select signal to camera core (IC609). |
| 21 | EEPROM BUSY | I | BUSY signal from EEPROM (IC601). Normally "H". "L" during data read/write. |
| 22 | | | Not used. |
| 23 | IRIS PWM | O | Iris control signal. |
| 24 | | | Not used. |
| 25 | | | |
| 26 | $\overline{\text{TESTX}}$ | O | Test signal of IC705. "H": Camera mode, "L": Test/VTR mode. |
| 27 | LENS RST LED | O | Lens reset sensor LED ON/OFF. "H": ON, "L": OFF. |
| 28 | FC RST | I | Lens focus reset sensor signal input. |
| 29 | ZM RST | I | Lens zoom reset sensor signal input. |
| 30 | XIRQ | | Connected to +3.6V. |
| 31 | VDD | | +3.6V power supply. |
| 32 | VSS | | GND |
| 33 | | | Not used. |
| 34 | | | |
| 35 | | | |
| 36 | $\overline{\text{CAM SCK}}$ | O | Serial data transfer clock. |
| 37 | CAM SO | O | Serial data output. |
| 38 | CAM SI | I | Serial data input. |
| 39 | | | Not used. |
| 40 | | | |
| 41 | VDD | | +3.6V power supply. |
| 42 | GENERAL A/D | I | Camera core (IC609) discrimination signal input. |
| 43 | LENS TYPE | I | Lens type discrimination signal input. |
| 44 | ZOOM SW | I | Zoom key signal input.<br>When not pressed: 1.8V, TELE 1: 2.7V, TELE 2: 3.6V, WIDE 1: 0.9V, WIDE 2: 0V. |
| 45 | MAN FOCUS (2) | I | Manual focus dial signal (2) input. 0V to 3.4V depending on the dial turning. |
| 46 | MAN FOCUS (1) | I | Manual focus dial signal (1) input. 0V to 3.4V depending on the dial turning. |
| 47 | | | Not used. Connected to GND. |
| 48 | | | |
| 49 | HALL A/D | I | Hall voltage. Approx. 1V (iris opened) to approx. 3.5V (iris closed). |
| 50 | VRL | I | Connected to GND. |
| 51 | VRH | I | Connected to +3.6V. |
| 52 | VSS | | GND |
| 53 | $\overline{\text{CS EEPROM}}$ | O | Chip select signal to EEPROM (IC601). |
| 54 | $\overline{\text{CS CAM OPD}}$ | O | Chip select signal to OPD (IC611). |
| 55 | D/A STB | O | Strobe signal to camera EVR (IC603). |
| 56 | EEPROM RESET | O | EEPROM (IC601) write disable signal. Normally "H". |
| 57 | $\overline{\text{CS AF OPD}}$ | O | Chip select signal to AF OPD (IC611). |
| 58 | $\overline{\text{CS PDR}}$ | O | Chip select signal to pre-driver (IC753). |
| 59 | $\overline{\text{CAM ON}}$ | O | A/D converter (IC704) ON/OFF signal. Normally "H". |
| 60 | $\overline{\text{NTSC}}$ | O | "L": NTSC, "H": PAL. |
| 61 | IRQ | I | Connected to +3.6V. |
| 62 | | | Not used. |
| 63 | | | |
| 64 | $\overline{\text{PDR RST}}$ | O | Reset signal to zoom/focus pre-driver (IC753). "H": Camera mode, "L": VTR mode. |
| 65 | $\overline{\text{NRML}}$/VST | O | "H": Steady shot operation, "L": Normal operation. |
| 66 | $\overline{\text{VST/CORE RST}}$ | O | Reset signal to steady shot control microprocessor (IC777) and camera core (IC609).<br>Normally "H". "L": Reset. |
| 67 | $\overline{\text{OPD RST}}$ | O | Reset signal to IC611 and IC705. "H": Camera mode, "L": VTR mode. |
| 68 | | | Not used. Connected to GND. |
| 69 | | | |
| 70 | VSS | | GND |
| 71 | VDD | | +3.6V power supply. |
| 72 | | | Not used. |
| 73 | EXTAL | I | 24 MHz clock oscillation circuit. |
| 74 | XTAL | O | |
| 75 | $\overline{\text{RESET}}$ | I | Reset signal from mode control microprocessor (VS board IC503). Normally "H". "L": Reset. |
| 76 | MODB | | Connected to +3.6V. |
| 77 | MODA | | Connected to GND. |
| 78 | RXD | | Not used. |
| 79 | TXD | | |
| 80 | VTR SO | O | Serial data output to mode control microprocessor (VS board IC503). |

## 6-2. STEADY SHOT CONTROL MICRO PROCESSOR PIN FUNCTION (VC BOARD IC777: CXP87132-010R) (CCD-TR82/TR400/TR550/TR750)

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | MPX | O | Not used. |
| 2 | $\overline{\text{ADC STBY}}$ | O | Standby output to A/D converter (IC776). Normally "H". |
| 3 | C RESET | O | Reset signal to PITCH/YAW sensor amplifier (IC772 to IC774) in initializing. Normally "L". |
| 4 | PB0/PPO8 | O | Not used. |
| 5 | PC7/RTO7 | O | |
| 6 | PC6/RTO6 | O | |
| 7 | PC5/RTO5 | O | |
| 8 | PC4/RTO4 | O | |
| 9 | PC3/RTO3 | O | |
| 10 | PC2/PPO18 | O | |
| 11 | PC1/PPO17 | O | |
| 12 | PC0/PPO16 | O | |
| 13 | PJ7 | O | |
| 14 | PJ6 | O | |
| 15 | PJ5 | O | |
| 16 | PJ4 | O | |
| 17 | PJ3 | O | |
| 18 | PJ2 | O | |
| 19 | PJ1 | O | |
| 20 | PJ0 | O | |
| 21 | PD7 | O | |
| 22 | PD6 | O | |
| 23 | PD5 | O | |
| 24 | PD4 | O | |
| 25 | PD3 | O | |
| 26 | PD2 | O | |
| 27 | PD1 | O | |
| 28 | PD0 | O | |
| 29 | PH7 | O | |
| 30 | PH6 | O | |
| 31 | PH5 | O | |
| 32 | PH4 | O | |
| 33 | PH3 | O | |
| 34 | PH2 | O | |
| 35 | PH1 | O | |
| 36 | PH0 | O | |
| 37 | MP | I | Connected to GND. |
| 38 | $\overline{\text{VST RST}}$ | I | Reset signal from camera microprocessor (IC602). Normally "H". |
| 39 | VSS | | GND. Connected to GND. |
| 40 | XTAL | O | Connected to 12 MHz crystal oscillator. |
| 41 | EXTAL | I | Connected to 12 MHz crystal oscillator. |
| 42 | $\overline{\text{CS VISTA MICOM}}$ | I | Chip select signal from camera microprocessor (IC602). |
| 43 | S IN | I | Serial data input from camera microprocessor (IC602). |
| 44 | S OUT | O | Serial data output to camera microprocessor (IC602). |
| 45 | $\overline{\text{CAM SCK}}$ | I | Serial data transfer clock from/to camera microprocessor (IC602). |
| 46 | PF7/AN11 | O | Not used. |
| 47 | PF6/AN10 | O | |
| 48 | PF5/AN9 | O | |
| 49 | PF4/AN8 | O | |
| 50 | AVSS | | A/D port GND. Connected to GND. |
| 51 | AVREF | I | A/D port reference voltage input. Connected to +3.6V. |
| 52 | AVDD | | A/D port positive power supply. Connected to +3.6V. |
| 53 | PF3/AN7 | I | Not used. Connected to +3.6V. |
| 54 | PF2/AN6 | I | |
| 55 | PF1/AN5 | I | |
| 56 | PF0/AN4 | I | |
| 57 | AN3 | I | |
| 58 | AN2 | I | |
| 59 | AN1 | I | |
| 60 | AN0 | I | |
| 61 | PG7/EX11 | I | Not used. Connected to GND. |
| 62 | CGV | I | V SYNC from sync generator (IC610). |
| 63 | FLD | I | FLD signal from sync generator (IC610). |
| 64 | PG4/SYNC0 | I | Not used. Connected to GND. |
| 65 | PG3//PBCTL | I | |
| 66 | PG2/DPG | I | |
| 67 | PG1/DFG | I | |
| 68 | PG0/CFG | I | |
| 69 | PE7/DAB1 | O | Not used. |
| 70 | PE6/DAB0 | O | |
| 71 | PE5/DAA1 | O | |
| 72 | PE4/DAA0 | O | |
| 73 | PE3/PWM1 | O | |
| 74 | PE2/PWM0 | O | |
| 75 | PE1//INT2 | I | Not used. Connected to +3.6V. |
| 76 | PE0//INT0 | I | |
| 77 | VST SI | I | Serial data input. |
| 78 | VST SO | O | Serial data output. |
| 79 | /VST SCK | O | Serial data transfer clock. |
| 80 | PI4//INT1 | O | Not used. |

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 81 | PI3/T0 | O | Not used. |
| 82 | PI2//PWM | O | |
| 83 | PI1/P0 | O | |
| 84 | PI0/PCK | I | Not used. Connected to +3.6V. |
| 85 | PKO | I | |
| 86 | GND | | GND |
| 87 | VDD | | +3.6V power supply. |
| 88 | VPP | | Connected to +3.6V. |
| 89 | (/CS_DISP) | O | Not used. |
| 90 | PA6/PPO6 | O | |
| 91 | /CS_ADC | O | Chip select signal to A/D converter (IC776). |
| 92 | /CS_ZTG | O | Chip select signal to timing generator (IC702). |
| 93 | /CS_ZVST | O | Chip select signal to IC613. |
| 94 | PA2/PPO2 | O | Not used. |
| 95 | PA1/PPO1 | O | |
| 96 | PA0/PPO0 | O | |
| 97 | PB7/PPO15 | O | |
| 98 | PB6/PPO14 | O | |
| 99 | PB5/PPO13 | O | |
| 100 | PB4/PPO12 | O | |

## 6-3. CAMERA CORE PIN FUNCTION (VC BOARD IC609: CXD2150R) (TR42/TR70/TR72/TR80/TR82/TR430) (VC BOARD IC609: CXD2150AR) (TR400/TR550/TR750)

| Pin No. | Signal Name | I/O | Function | |
|---|---|---|---|---|
| 1 | OPD6 | O | OPD (IC611) data output. | |
| 2 | OPD5 | O | OPD data output. | |
| 3 | OPD4 | O | OPD data output. | |
| 4 | OPD3 | O | OPD data output. | |
| 5 | OPD2 | O | OPD data output. | |
| 6 | OPD1 | O | OPD data output. | |
| 7 | OPD0 | O | OPD data output, LSB. | |
| 8 | OPDID | O | OPD line discrimination signal. | |
| 9 | VDD | – | Power supply (+3.6V). | |
| 10 | CO3 | O | C signal output, MSB (CCD-TR82/TR400/TR550). | |
| 11 | CO2 | O | C signal output (CCD-TR82/TR400/TR550). | |
| 12 | CO1 | O | C signal output (CCD-TR82/TR400/TR550). | |
| 13 | CO0 | O | C signal output, LSB (CCD-TR82/TR400/TR550). | |
| 14 | VSS | – | GND | |
| 15 | CI3 | I | C signal input, MSB (CCD-TR82/TR400/TR550). | |
| 16 | CI2 | I | C signal input (CCD-TR82/TR400/TR550). | |
| 17 | CI1 | I | C signal input (CCD-TR82/TR400/TR550). | |
| 18 | CI0 | I | C signal input, LSB (CCD-TR82/TR400/TR550). | |
| 19 | NRB | O | C signal. Color discrimination signal. | |
| 20 | VDD | – | +3.6V power supply. | |
| 21 | VBC | | Connected to GND via 0.1 $\mu$F capacitor. | Chroma signal D/A converter interface. |
| 22 | AVSC | | GND | |
| 23 | IREFC | | Connected to GND via 12 k$\Omega$ resistor. | |
| 24 | VREFC | I | Full scale output value setting voltage. | |
| 25 | VGC | | Connected to +3.6V power supply via 0.1 $\mu$F capacitor. | |
| 26 | AVDC | | +3.6V power supply. | |
| 27 | IOC | O | Chroma signal output (Current output). | |
| 28 | VDD | – | Y I/F power supply (+3.6V). | |
| 29 | DICK | O | Memory interface reference clock (CCD-TR82/TR400/TR550). | |
| 30 | CDIS | O | Digital output (chroma) color discrimination signal (CCD-TR82/TR400/TR550). | |
| 31 | YO7 | O | Y signal output, MSB (CCD-TR82/TR400/TR550). | |
| 32 | YO6 | O | Y signal output (CCD-TR82/TR400/TR550). | |
| 33 | YO5 | O | Y signal output (CCD-TR82/TR400/TR550). | |
| 34 | YO4 | O | Y signal output (CCD-TR82/TR400/TR550). | |
| 35 | YO3 | O | Y signal output (CCD-TR82/TR400/TR550). | |
| 36 | YO2 | O | Y signal output (CCD-TR82/TR400/TR550). | |
| 37 | YO1 | O | Y signal output (CCD-TR82/TR400/TR550). | |
| 38 | YO0 | O | Y signal output, LSB (CCD-TR82/TR400/TR550). | |
| 39 | DATS | I | DA test pin. (Normally fixed at "L".) | |
| 40 | YI7 | I | Y signal input, MSB (CCD-TR82/TR400/TR550). | |

| Pin No. | Signal Name | I/O | Function | |
|---|---|---|---|---|
| 41 | YI6 | I | Y signal input (CCD-TR82/TR400/TR550). | |
| 42 | YI5 | I | Y signal input (CCD-TR82/TR400/TR550). | |
| 43 | YI4 | I | Y signal input (CCD-TR82/TR400/TR550). | |
| 44 | YI3 | I | Y signal input (CCD-TR82/TR400/TR550). | |
| 45 | YI2 | I | Y signal input (CCD-TR82/TR400/TR550). | |
| 46 | YI1 | I | Y signal input (CCD-TR82/TR400/TR550). | |
| 47 | YI0 | I | Y signal input, LSB (CCD-TR82/TR400/TR550). | |
| 48 | VSS | – | GND | |
| 49 | IOY | O | Y signal output (current output). | Y signal D/A converter interface. |
| 50 | AVDY | | +3.6V power supply. | |
| 51 | VGY | | Connected to +3.6V power supply via 0.1 μF capacitor. | |
| 52 | VRFY | I | Full scale output value setting voltage. | |
| 53 | IRFY | | Connected to GND via 12 kΩ resistor. | |
| 54 | AVSY | | GND | |
| 55 | VBY | | Connected to GND via 0.1 μF capacitor. | |
| 56 | VDD | – | +3.6V power supply | |
| 57 | BIN | I | Not used. | |
| 58 | GIN | I | Not used. | |
| 59 | RIN | I | Not used. | |
| 60 | TIKEY | I | Not used. | |
| 61 | WKEY | I | Wide ID signal input. | |
| 62 | VCK | I | PAL 4 fsc modulation clock. | |
| 63 | VHLD | I | Mosaic processing vertical hold control signal. | |
| 64 | HHLD | I | Mosaic processing horizontal hold control signal. | |
| 65 | CSYN | I | Sync signal (SYNC) input. | |
| 66 | LALT | I | PAL line modulation inverted signal input. | |
| 67 | CBK | I | Blanking signal (CBLK) input. | |
| 68 | BF | I | Burst added signal input. | |
| 69 | HD | I | Horizontal sync signal (HD) input. | |
| 70 | VD | I | Vertical sync signal (VD) input. | |
| 71 | AJST | I | Data sampling pulse input. | |
| 72 | VDD | – | +3.6V power supply. | |
| 73 | SCK | I | Serial interface clock input from camera microprocessor (IC602). | |
| 74 | SI | I | Serial interface data input from camera microprocessor. | |
| 75 | XCE | I | Serial interface enable input from camera microprocessor. | |
| 76 | SO | O | Serial interface data output to camera microprocessor. | |
| 77 | VSS | – | GND | |
| 78 | CLK | I | Clock input. | |
| 79 | DEF | I | Defect compensation position pulse. | |
| 80 | ID | I | Color line discrimination signal. | |

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 81 | MCK | I | Main clock input. |
| 82 | VDD | – | +3.6V power supply. |
| 83 | XCLR | I | All clear input. |
| 84 | VDD | – | AD I/F power supply (+3.6V). |
| 85 | ADCK | O | AD converter clock output. Not used. |
| 86 | VSS | – | GND |
| 87 | AD0 | I | AD data input from A/D converter (IC704), MSB. |
| 88 | AD1 | I | AD data input from A/D converter. |
| 89 | AD2 | I | AD data input from A/D converter. |
| 90 | AD3 | I | AD data input from A/D converter. |
| 91 | AD4 | I | AD data input from A/D converter. |
| 92 | AD5 | I | AD data input from A/D converter. |
| 93 | AD6 | I | AD data input from A/D converter. |
| 94 | AD7 | I | AD data input from A/D converter. |
| 95 | AD8 | I | AD data input from A/D converter. |
| 96 | AD9 | I | AD data input from A/D converter, LSB. |
| 97 | VDD | – | +3.6V power supply. |
| 98 | OPD9 | O | OPD (IC611) data output, MSB. |
| 99 | OPD8 | O | OPD data output. |
| 100 | OPD7 | O | OPD data output. |

# 6-4. MECHANISM CONTROL MICRO PROCESSOR PIN FUNCTION (VS BOARD IC505: CXP87132-009R)

**Note 1:** CCD-TR72/TR80/TR400/TR430/TR750
**Note 2:** CCD-TR400

<table>
<tr><th>Pin No.</th><th>Signal Name</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>RP PB MODE</td><td>O</td><td>REC/PB switching signal of REC/PB amplifier (VS board IC102) and ATF servo IC (VS board IC508).<br>"H": PB.</td></tr>
<tr><td>2</td><td>$\overline{\text{FE ON}}$</td><td>O</td><td>Flying erase oscillation on/off control signal. "L": Oscillation.</td></tr>
<tr><td>3</td><td>JOG VD</td><td>O</td><td>False VD signal inserted in playback video signal during variable speed playback.</td></tr>
<tr><td>4</td><td>JOG</td><td>O</td><td>Variable speed playback/normal playback switching signal of video circuit.<br>"H": Variable speed playback.</td></tr>
<tr><td>5</td><td>$\overline{\text{S JACK IN}}$</td><td>I</td><td>(Note 2)</td></tr>
<tr><td>6</td><td>$\overline{\text{PB 1.7M DET}}$</td><td>I</td><td>AFM stereo tape/monaural tape discrimination input.<br>"H": During stereo or bilingual tape playback. (Note 1)</td></tr>
<tr><td>7</td><td>JACK MON/$\overline{\text{ST}}$ DET</td><td>I</td><td>Monaural/stereo discrimination input of audio input/output terminal.<br>"L": When jack is inserted in right channel terminal. (Note 1)</td></tr>
<tr><td>8</td><td>INT VD</td><td>O</td><td>Internal VD signal.</td></tr>
<tr><td>9</td><td>SYSTEM SYNC (PBV)</td><td>O</td><td>System synchronizing signal.</td></tr>
<tr><td>10</td><td>$\overline{\text{SYNC DET}}$</td><td>O</td><td>Sync detect output. "L" when sync is detect.</td></tr>
<tr><td>11</td><td>E/$\overline{\text{L}}$ DET</td><td>I</td><td>Normal/Hi8 discrimination input. "H" when Hi8 tape playback. (Note 2)</td></tr>
<tr><td>12</td><td>$\overline{\text{MIC MONO}}$</td><td>I</td><td>External microphone monaural/stereo discrimination input.<br>"L": When monaural microphone is used. (Note 1)</td></tr>
<tr><td>13</td><td>MODE SW 0</td><td>I</td><td rowspan="3">Mode switch input.
<table>
<tr><th></th><th>BL</th><th>END</th><th>EJECT</th><th>USE</th><th>LOAD</th><th>READY</th><th>TURN</th><th>REC/PB</th><th>FF</th></tr>
<tr><td>M SW 0</td><td>H</td><td>L</td><td>L</td><td>H</td><td>L</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>M SW 1</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>H</td><td>L</td></tr>
<tr><td>M SW 2</td><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>14</td><td>MODE SW 1</td><td>I</td></tr>
<tr><td>15</td><td>MODE SW 2</td><td>I</td></tr>
<tr><td>16</td><td>$\overline{\text{CC DOWN SW}}$</td><td>I</td><td>Cassette compartment down switch input. "L": down</td></tr>
<tr><td>17</td><td>REC PROOF SW</td><td>I</td><td>Recording-proof switch input. "H": REC prohibition.</td></tr>
<tr><td>18</td><td>ME/$\overline{\text{MP}}$ SW</td><td>I</td><td>ME/$\overline{\text{MP}}$ switch input. "L": MP, "H": ME.</td></tr>
<tr><td>19</td><td>Hi8 MP SW</td><td>I</td><td>Hi8 MP switch input. "H": Hi8 MP, "L": Normal MP or ME.</td></tr>
<tr><td>20</td><td>$\overline{\text{LM LIM ON}}$</td><td>O</td><td>Loading motor limiter on detection signal. Normally "H": "L" when limiter is on.</td></tr>
<tr><td>21</td><td>LINE MIX</td><td>O</td><td>Audio stereo/monaural control signal. (Note 1)</td></tr>
<tr><td>22</td><td>MX SEL 1</td><td>O</td><td rowspan="2">When recording: Monaural/stereo switching signal.
<table>
<tr><th></th><th>Monaural</th><th>Stereo</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td></tr>
<tr><td>MX SEL 2</td><td>H</td><td>L</td></tr>
</table>
When playing back: Monaural/stereo/bilingual switching signal.
<table>
<tr><th></th><th>Stereo</th><th>Main</th><th>Sub</th><th>Monaural</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td><td>H</td><td>L</td></tr>
<tr><td>MX SEL 2</td><td>L</td><td>H</td><td>L</td><td>H</td></tr>
</table>
(Note 1)</td></tr>
<tr><td>23</td><td>MX SEL 2</td><td>O</td></tr>
<tr><td>24</td><td>MX ON/OFF</td><td>O</td><td>Matrix on/off signal. "H": Matrix on (stereo recording/playback) (Note 1)</td></tr>
<tr><td>25</td><td>COMP REC</td><td>O</td><td>Video input/S video input switching signal. "H": Video input.</td></tr>
<tr><td>26</td><td>CAM/$\overline{\text{LINE}}$</td><td>O</td><td>Camera input/line input switching signal. "H": Camera input.</td></tr>
<tr><td>27</td><td>$\overline{\text{WIND}}$</td><td>O</td><td>"L": Wind sound decrease on. (Note 1)</td></tr>
<tr><td>28</td><td>N.C.</td><td></td><td>Not used.</td></tr>
<tr><td>29</td><td>UNLOAD</td><td>O</td><td>Loading motor control signal. When unloading: "H" or "H" pulse.</td></tr>
<tr><td>30</td><td>LOAD</td><td>O</td><td>Loading motor control signal. When loading: "H" or "H" pulse.</td></tr>
</table>

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 31 | $\overline{\text{LM LIM CONT}}$ | O | Loading motor limiter control signal. Momentarily "H" when loading. |
| 32 | DRUM ON | O | Drum motor on/off signal. "H" (Approx. 1.3V): Drum on. |
| 33 | DRUM RVS | O | Drum rotation direction control signal. Normally "L". |
| 34 | N.C. | | Not used. (open) |
| 35 | $\overline{\text{EDIT}}$ | O | Video circuit normal/EDIT switching signal. "L": When edit of menu display is at "ON". |
| 36 | E/$\overline{\text{L}}$ OUT | O | Video circuit normal/Hi8 switching signal. "H": Hi8 mode. (Note 2) |
| 37 | MP | | Connected to GND. |
| 38 | $\overline{\text{RESET}}$ | I | Reset signal from mode control micro processor (VS board IC503). When reset: "L". |
| 39 | VSS | | GND |
| 40 | XTAL | O | 11.89 MHz clock oscillation circuit. |
| 41 | EXTAL | I | |
| 42 | $\overline{\text{MECHA CON CS}}$ | I | Chip select signal from mode control micro processor (VS board IC503). |
| 43 | DATA TO SLAVE | I | Serial data input from mode control micro processor. |
| 44 | DATA TO MASTER | O | Serial data output to mode control micro processor. |
| 45 | $\overline{\text{MODECON SCK}}$ | I | Serial clock input from mode control micro processor. |
| 46 | AUDIO MUTE | O | Audio output mute signal. "H": Mute. |
| 47 | VIDEO MUTE | O | Video output mute signal. "H": Mute. |
| 48 | MONO REC<br>(1.7M $\overline{\text{ON}}$/OFF) | O | Monaural/stereo recording switching signal.<br>"H": During monaural recording (1.7 MHz REC AFM carrier off). (Note 1) |
| 49 | N.C. | | |
| 50 | AVSS | | A/D converter system GND. |
| 51 | AVREF | | A/D converter system reference voltage. Connected to SS3.6V. |
| 52 | AVDD | | A/D converter system power supply. Connected to SS3.6V. |
| 53 | EXT MIC | I | External microphone discrimination input. Not used. |
| 54 | END SENS | I | Tape end detection signal. Normally: "L", "H" pulse at tape end. |
| 55 | TOP SENS | I | Tape top detection signal. Normally: "L", "H" pulse at tape top. |
| 56 | $\overline{\text{DEW DET}}$ | I | Condensation detection signal. "L" when condensation present. |
| 57 | N.C. | | Not used. Connected to GND. |
| 58 | ATF ERROR | I | ATF error input. |
| 59 | S REEL FG | I | S reel FG signal input. |
| 60 | T REEL FG | I | T reel FG signal input. |
| 61 | NC | | Not used. Connected to GND. |
| 62 | CAM VD | I | VD signal from camera circuit sync generator (VC board IC610). V cycle pulse. |
| 63 | FLD | I | FIELD signal from camera circuit sync generator. |
| 64 | VTR SYNC | I | Composite sync signal separated from recording/playback Y signal. |
| 65 | | I | Connected to GND. |
| 66 | DRUM PG | I | Drum PG signal input. For drum phase servo. 33.3 msec. cycle "H" pulse. |
| 67 | DRUM FG | I | Drum FG signal input. For drum speed servo. 2.8 msec. cycle pulse. |
| 68 | CAP FG | I | Capstan FG signal input. |
| 69 | N.C. | O | Not used. |

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 70 | T/E LED ON | O | TAPE LED on/off signal. 200 msec. cycle "H" pulse during REC/PB. |
| 71 | SP/LP | O | SP/LP switching signal. "L": LP. |
| 72 | ME/MP OUT | O | Recording current switching signal. "H": ME tape. |
| 73 | CAP PWM | O | Capstan error signal output. PWM signal. |
| 74 | DRUM PWM | O | Drum error signal output. PWM signal. |
| 75 | CFG HMS | I | Capstan FG signal input. |
| 76 | 5.9M ATF CLK | O | Clock signal for ATF servo IC (IC508). |
| 77 | CS TO ATF | O | Chip select signal for ATF servo IC. |
| 78 | DATA TO ATF | O | Serial data output to ATF servo IC. |
| 79 | ATF SCK | O | Serial clock output to ATF servo IC. |
| 80 | ATF STBY | O | Standby signal for ATF servo IC. |
| 81 | SP/LP DET | I | Discriminates recording mode. |
| 82 | CLOG DET | I | Head clog detection signal. "L": Normal. |
| 83 | REF PILOT | O | Reference pilot signal for ATF servo. |
| 84 | N.C. |  | Not used. Connected to GND. |
| 85 | N.C. | I |  |
| 86 | VSS |  | GND |
| 87 | VDD |  | Connected to SS3.6V. |
| 88 | VPP |  |  |
| 89 | DRUM ACC | O | Drum motor acceleration signal. |
| 90 | DRUM BLK | O | Drum motor brake signal. Normally: "L". |
| 91 | N.C. |  | Not used. (open) |
| 92 | N.C. | O |  |
| 93 | VIDEO IN/OUT | O | Video input/output switching signal. "L": Video output. |
| 94 | AUDIO IN/OUT | O | Audio input/output switching signal. "H": Audio output. |
| 95 | VA PB MODE | O | REC/PB switching signal of video; audio circuit. "H": PB. |
| 96 | VI SWP | O | RF switching pulse signal for video circuit. |
| 97 | RF SWP | O | RF switching pulse signal for REC/PB amp and audio circuit. |
| 98 | HEAD CHG | O | Head switching signal. |
| 99 | CAP ON | O | Capstan driver on/off control signal. "H": Capstan on. |
| 100 | CAP FWD/RVS | O | Capstan rotation direction control signal. "H": FWD. "L": RVS. |

## 6-5. MODE CONTROL MICRO PROCESSOR PIN FUNCTIONS (VS BOARD IC503: MB89098PFV-G-107-BND)

**Note 1:** CCD-TR70/TR80
**Note 2:** CCD-TR400/TR750
**Note 3:** CCD-TR82/TR400/TR550

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | TEST MODE 0 | I | Connected to GND. |
| 2 | TEST MODE 1 | I | Connected to GND. |
| 3 | X0 | I | 10 MHz clock oscillation circuit. |
| 4 | X1 | O |  |
| 5 | VSS |  | GND |
| 6 | RESET | I | Reset input. |
| 7 | DATA SW | I | Date (+) key (CK board S221) input. Normally "H". "L" when key is pressed. |
| 8 | TIME SW | I | Time key (CK board S222) input. Normally "H". "L" when key is pressed. |
| 9 | EJECT SW | I | Cassette eject switch (FK board S103) input. Normally "H". "L" when switch is pressed. |
| 10 | VTR MODE SW | I | Power supply switch (CK board S223) input. "L" when power supply switch is at "Video". |
| 11 | AGE SW | I | AGE switch input. "L" when key is pressed. Not used. |
| 12 | START/STOP SW | I | Start/stop key (FK board S102) input. "L" when key is pressed. |
| 13 | CC DOWN SW | I | CCDOWN switch (mechanism section) input. "L" when cassette compartment is locked. |
| 14 | CAM+STBY SW | I | Power supply switch (CK board S223), stand-by switch (FK board S101) input.<br>"L" when power supply switch is at "Camera" and stand-by switch at "Standby". |
| 15 | BATT IN | I | Main battery detection input. "H" when main battery is loaded or external power supply is connected. |
| 16 | PB V | I | System sync signal from mechanism control micro processor (VS board IC505). |
| 17 | RF SWP | I | RF switching pulse. |
| 18 | LANC POWER ON | I | Power on signal input from wired remote commander. "L" when power switch of remote commander is pressed. |
| 19 | LI PRE END | I | Lithium battery end detection input. "L" when lithium battery has worn out or has not been loaded. |
| 20 | EEPROM WE | O | EEPROM (VS board IC502) writing enable signal. "L" when writing data. |
| 21 |  |  | Not used. |
| 22 |  |  |  |
| 23 | TALLY LED | O | Tally LED on/off signal. |
| 24 | SYSTEM RESET | O | Reset signal of all systems. Normally "H". "L" when reset. |
| 25 | N.C. | O | Not used. |
| 26 | BATT IN | I |  |
| 27 | N.C. |  | Not used. |
| 28 | N.C. |  |  |
| 29 | N.C. |  |  |
| 30 | SIRCS SIG | I | Infrared remote commander signal input. |
| 31 | N.C. |  | Not used. |
| 32 |  |  |  |
| 33 | CS EEPROM | O | Chip select signal to EEPROM (VS board IC502). |
| 34 | CS VIDEO | O | Chip select signal to video IC (VS board IC201). |
| 35 | EVF DA STB | O | Chip select signal to EVR of COLOR EVF (VF board IC903) (Note 1). |
| 36 | CS SG | O | Chip select signal to SYNC generator (VC board IC610). |
| 37 | CS DA | O | Strobe signal to DA (VS board IC951). |
| 38 | CS CAM | O | Chip select signal to camera micro processor (VC board IC602). |
| 39 | N.C. | O | Not used. |
| 40 | N.C. | O |  |

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 41 | N.C. | | Not used. |
| 42 | N.C. | | |
| 43 | SEG19 | O | LCD segment terminal drive signal. Pulse of 4 values (0V, 1.2V, 2.4V and 3.6V). (Note 2) |
| 44 | SEG18 | O | |
| 45 | SEG17 | O | |
| 46 | SEG16 | O | |
| 47 | VCC | | +3.6V power supply (+3V power supply during backup). |
| 48 | SEG15 | O | LCD segment terminal drive signal. Pulse of 4 values (0V, 1.2V, 2.4V and 3.6V). (Note 2) |
| 49 | SEG14 | O | |
| 50 | SEG13 | O | |
| 51 | SEG12 | O | |
| 52 | SEG11 | O | |
| 53 | SEG10 | O | |
| 54 | SEG09 | O | |
| 55 | SEG08 | O | |
| 56 | | | GND |
| 57 | SEG07 | O | LCD segment terminal drive signal. Pulse of 4 values (0V, 1.2V, 2.4V and 3.6V). (Note 2) |
| 58 | SEG06 | O | |
| 59 | SEG05 | O | |
| 60 | SEG04 | O | |
| 61 | SEG03 | O | |
| 62 | SEG02 | O | |
| 63 | SEG01 | O | |
| 64 | SEG00 | O | |
| 65 | V3 | I | 3.6V<br>LCD drive bias voltage. (Note 2) |
| 66 | V2 | I | 2.4V |
| 67 | V1 | I | 1.2V |
| 68 | V0 | I | 0V |
| 69 | COM0 | O | LCD COM terminal drive signal. Pulse of 4 values (0V, 1.2V, 2.4V and 3.6V). (Note 2) |
| 70 | COM1 | O | |
| 71 | COM2 | O | |
| 72 | COM3 | O | |
| 73 | $\overline{\text{CS OSD}}$ | O | Chip select signal to character generator (VC board IC614). |
| 74 | $\overline{\text{CS MECHA}}$ | O | Chip select signal to mechanism control micro processor (VS board IC505). |
| 75 | DATA TO MASTER | I | Serial data input signal. |
| 76 | DATA TO SLAVE | O | Serial data output signal. |
| 77 | $\overline{\text{MODECON SCK}}$ | O | Serial data transfer clock. |
| 78 | N.C. | O | Not used. |
| 79 | VTR DD ON | O | VTR DC-DC converter control signal. "H" when power switch is at "Player/video" or "Camera". |
| 80 | CAM DD ON | O | CAMERA DC-DC converter control signal. |
| 81 | AVSS | | A/D port GND. |

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 82 | K AD IN 0 | I | Key input. A/D port.<br>REC key (FK board S101, 106 (Note 2))<br>FF key (FK board S105)<br>STOP key (FK board S104) |
| 83 | K AD IN 1 | I | Key input. A/D port.<br>PLAY key (FK board S111)<br>REW key (FK board S110)<br>PAUSE key (FK board S109) |
| 84 | K AD IN 2 | I | Key input. A/D port.<br>SET key (CK board S204)<br>SELECT (–) key (CK board S203)<br>SELECT (+) key (CK board S202)<br>MENU key (CK board S201) |
| 85 | K AD IN 3 | I | Key input. A/D port.<br>FOCUS MANUAL key (CK board S211 (Note 2))<br>FADER key (CK board S208)<br>BACK LIGHT/BRIGHT key (CK board S207)<br>PROGRAM AE key (CK board S205) |
| 86 | K AD IN 4 | I | Key input. A/D port.<br>STEADY SHOT key (CK board S211 (Note 3))<br>EDIT SEARCH (–) key (CK board )<br>EDIT SEARCH (+) key (CK board )<br>COUNTER RESET key (CK board) |
| 87 | N.C. | | Not used. |
| 88 | N.C. | | |
| 89 | N.C. | | |
| 90 | AVCC | | A/D port power supply (+3.6V). |
| 91 | BATT SENS | I | For main battery voltage input. (Voltage divided into 1/3.14 by R586, R587). |
| 92 | N.C. | I | Not used. |
| 93 | BRIGHA B | I | Brightness adjusting dial input. Pulse input by dial rotation. (Note 2). |
| 94 | BRIGHT B | I | Brightness adjusting dial input. Pulse input by dial rotation. (Note 2). |
| 95 | LANC IN | I | LANC serial data input. |
| 96 | LANC OUT | O | LANC serial data output. |
| 97 | BUZZER | O | Buzzer output. |
| 98 | VCC | | +3.6V power supply. |
| 99 | CL1 | O | 32 kHz clock oscillation circuit (for clock). |
| 100 | CL0 | I | |

# SECTION 7
# ADJUSTMENTS

## 7-1. CAMERA SECTION ADJUSTMENTS

**When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 7–30.**

## 1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

### 1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

| Ref. No. | Name | Parts Code | Usage |
|---|---|---|---|
| J-1 | Filter for color temperature correction (C14) | J-6080-058-A | Auto white balance adjustment/check<br>White balance adjustment/check |
| J-2 | ND filter 1.0 | J-6080-808-A | White balance check |
|  | ND filter 0.3 | J-6080-818-A | White balance check |
| J-3 | Pattern box PTB-450 | J-6082-200-A |  |
| J-4 | Color chart for pattern box | J-6020-250-A |  |
| J-5 | Adjusting remote commander (RM-95-remodeled partly)[Note 1] | J-6082-053-A |  |
| J-6 | Siemens star | J-6080-875-A | For checking the flange back |
| J-7 | Extension cable (42P, 0.8 mm) | J-6082-285-A | For extension between the VC board (CN601) and VS board (CN203) |
|  | Extension cable (34P, 0.8 mm) | J-6082-286-A | For extension between the AU-165 board CN1302 and VS board (CN202), For CCD-TR72/TR80/TR400/TR750 |
| J-8 | Extension cable (9P, 0.8 mm) | J-6082-288-A | For extension between the FK board and VS board (CN502) |
|  | Extension cable (18P, 0.8 mm) | J-6080-289-A | For extension between the CK board and VS board (CN503) |
| J-9 | Measuring pin tool for COLOR EVF | J-6082-192-A | For adjusting the COLOR EVF |

**Note 1:** If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

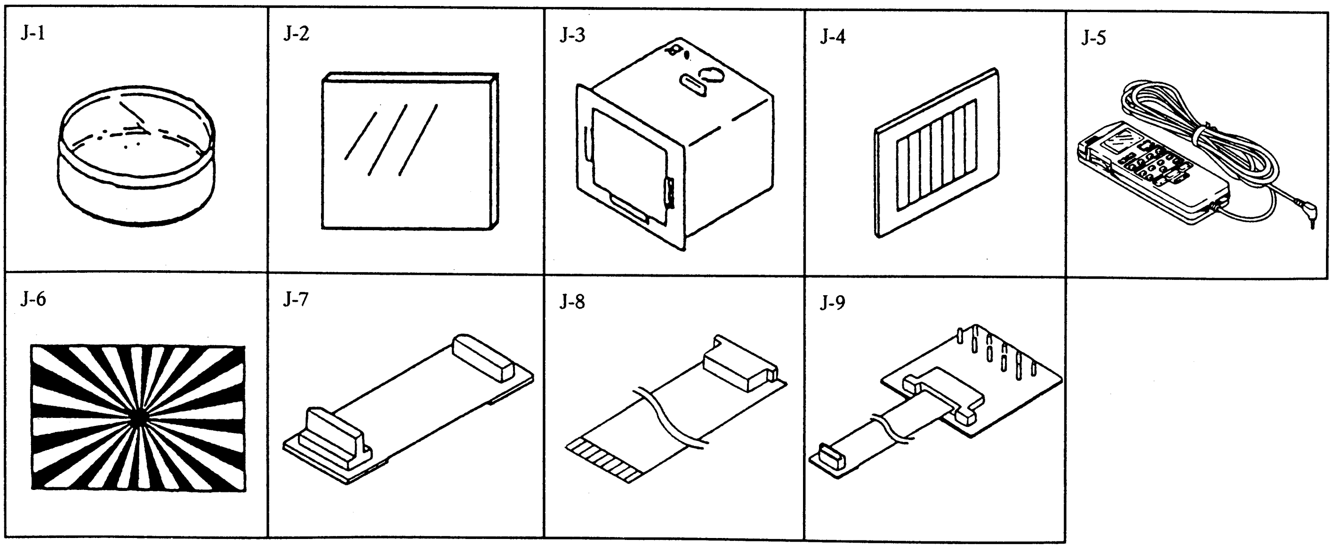


Fig. 7-1-1.

### 1-1-2. Preparations

**Note 1:** For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

**Note 2:** When adjusting only, the lens block and VC board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 7-1-3.
2) The F panel block (MA board) is not required in adjustments. Remove the following connector.
   1. CN1301 of the AU board
3) If remove the cabinet (R) (Power switch, camera function switch and electronic view-finder), set to the camera power supply ON mode (Note 1), and disconnect the following connectors.
   1. CN503 of VS board
   2. CN206 of VS board
   3. CN101 of ZB board

   Be sure to exit this mode after completing the adjustment. (Note 2)
4) Turning OFF the Auto Focus Using the Adjusting Remote Commander
   1. Set data: 01 to page: 6, address: 25.
      (The auto focus will turn OFF. The focus can be adjusted using the focus button on the adjusting remote commander. But the HOLD switch must be set to OFF.)
   2. After completing the adjustment/operation check, set data: 00 to page: 6, address: 25.
5) Turning OFF the STEADY SHOT Function Using the Adjusting Remote Commander (CCD-TR82/TR400/TR550/TR750)
   1. Set data: 02 to page: 6, address: 32.
   2. Set data: 01 to page: 6, address: 33.
      (The STEADY SHOT will go OFF.)
   3. After completing the adjustment/operation check, return the data of address: 32 and address: 33 of page: 6 to 00.

**Note 1:** Setting the Forced Camera Power Supply ON Mode

1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the cabinet (R) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

**Note 2:** Exiting the Forced Camera Power Supply ON Mode

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

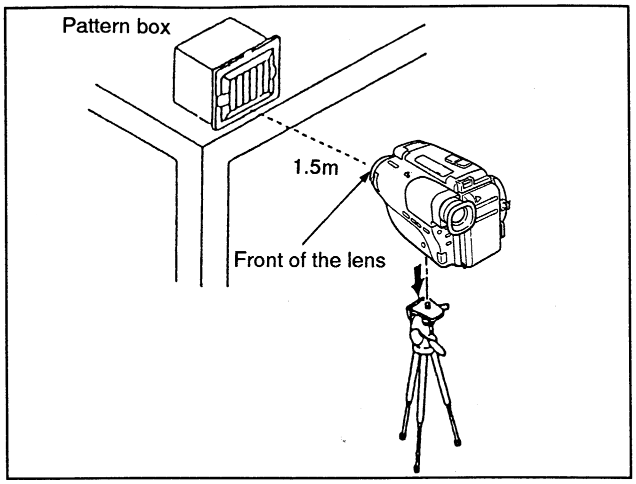


Fig. 7-1-2.

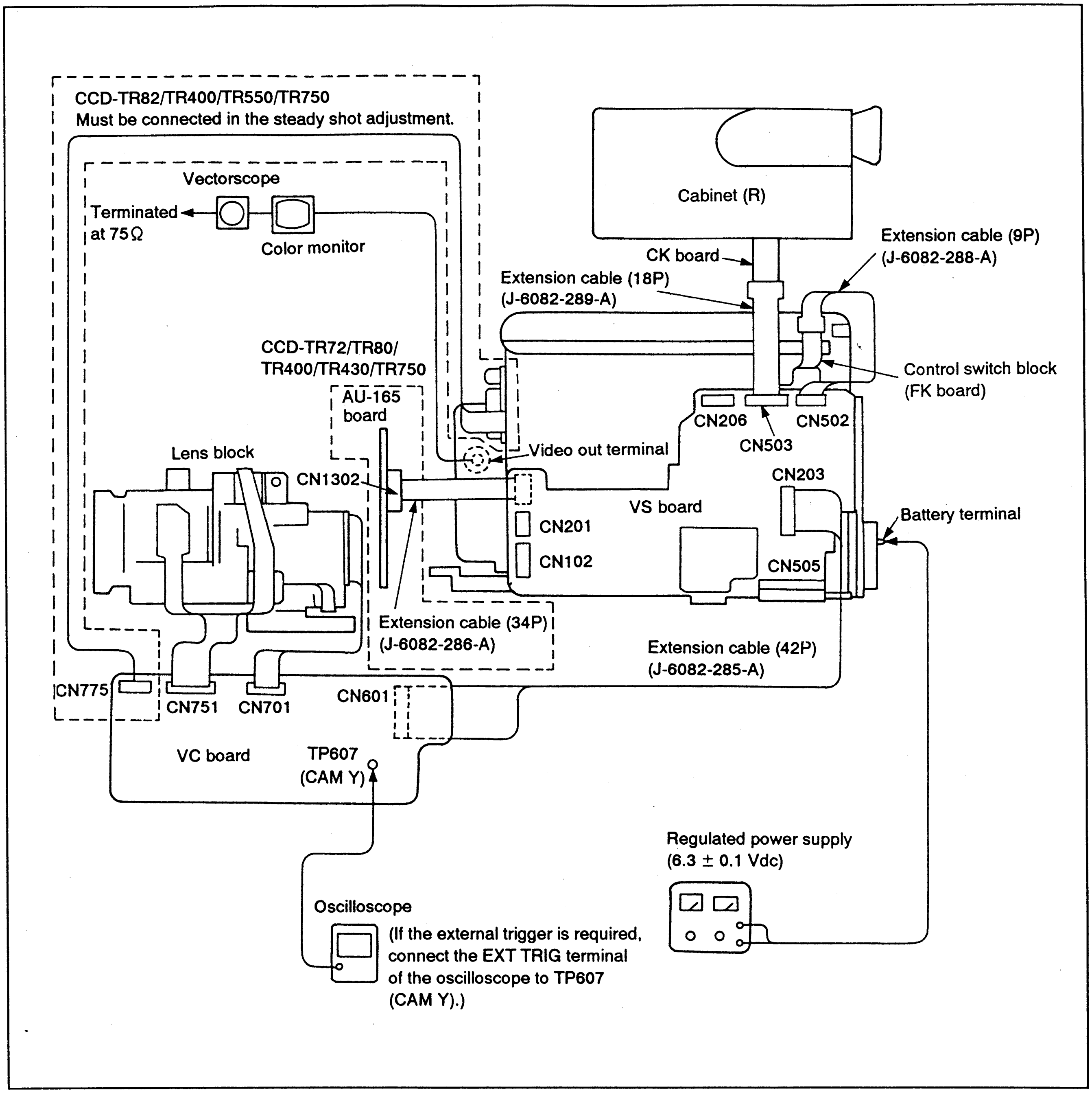

CCD-TR82/TR400/TR550/TR750
Must be connected in the steady shot adjustment.
Vectorscope
Terminated at 75Ω
Color monitor
Cabinet (R)
CK board
Extension cable (18P)
(J-6082-289-A)
Extension cable (9P)
(J-6082-288-A)
Control switch block
(FK board)
CCD-TR72/TR80/
TR400/TR430/TR750
AU-165
board
CN206
CN503
CN502
Video out terminal
Lens block
CN1302
CN203
VS board
Battery terminal
CN201
CN102
CN505
Extension cable (34P)
(J-6082-286-A)
Extension cable (42P)
(J-6082-285-A)
CN775
CN751
CN701
CN601
VC board
TP607
(CAM Y)
Regulated power supply
(6.3 ± 0.1 Vdc)
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to TP607 (CAM Y).)

Fig. 7-1-3.

### 1-1-3. Precautions

### 1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

1. Camera/player power switch (Control switch block (Control switch block (CK board)) ……………………………………………………Camera
2. Standby switch (Control switch block (FK board)) ·· Standby
3. PROGRAM AE button (Control switch block (CK board)) ……………………………………………………Off
4. FOCUS switch (Control switch block (CK board)) ···Manual
5. BACK LIGHT button (Control switch block (CK board)) ……………………………………………………Off
6. STEADY SHOT button (CCD-TR82/TR400/TR550/TR750) (Control switch block (CK board))…………………………Off

### 2. Adjusting Procedure

Adjust in the given order.

### 3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 7-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   Don't touch the zoom switch.

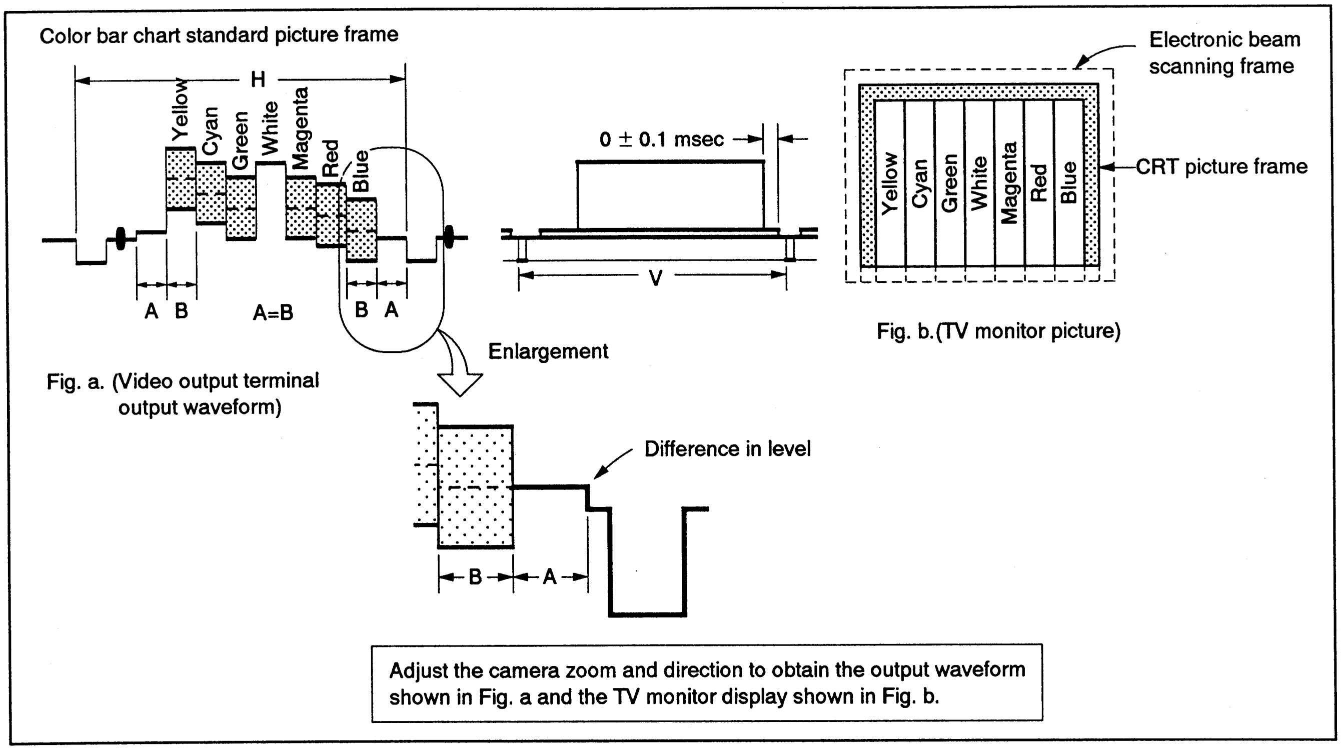

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a. (Video output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 7-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-1-5.

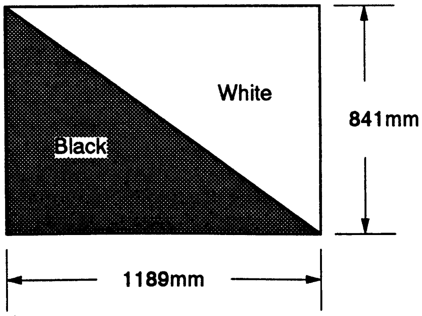

White
Black
841mm
1189mm

Fig. 7-1-5.

**Note:** Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

### 1-1-4. Adjusting Remote Commander

The camera section is adjusted by changing the constant or coefficient of the digital signal processing calculation, or modifying the output voltage of the EVR IC (VC board IC603). This is controlled by the camera micro processor (VC board IC602), which reads the data written in the nonvolatile memory (VC board IC601: EEPROM), and transmits it to the digital signal processing circuit and EVR.

To perform adjustments, adjustment data written in the nonvolatile memory must be rewritten, using the adjusting remote commander.

The adjusting remote commander uses the remote commander signal line (LANC) to communicate mutually with the camera microprocessor. The page, address and the up/down commands of the data are transmitted from the adjusting remote commander to the camera micro processor. And, the page, address, and data are transmitted for the vice versa.

### 1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 7-1-6.

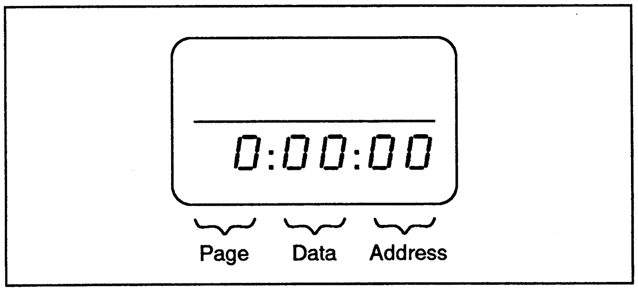


Fig. 7-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

| Hexadecimal notation | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LCD Display** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | c | d | E | F |
| **Decimal notation conversion value** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Table 7-1-1.

   - Changing the address
     The address increases when the FF ( ►► ) button is pressed, and decreases when the REW ( ◄◄ ) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY ( ► ) button is pressed, and decreases when the STOP ( ■ ) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

### 2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

### 1-1-5. Page F Address List

**Note 1:** The data already listed in the adjustment data memo column are fixed values.

**Note 2:** The adjustment data initial values are values just after executing "Page F Data Initialization" and "Page F Data Modification". They are different from the values after executing all adjustments.

**Note 3:** In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

**Note 4:** No mark : CCD-TR42/TR72/TR80/TR430
( ) : CCD-TR82/TR550
〈 〉 : CCD-TR70
《 》 : CCD-TR400/TR750

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 00 | 5C (5A) 〈5E〉 《56》 | 5C (5A) 〈5E〉 《56》 |
| 01 | 0A (00) | 0A (00) |
| 02 | 00 | 00 |
| 03 | 00 (07) | 00 (07) |
| 04 | 80 | |
| 05 | 80 | |
| 06 | 80 | |
| 07 | 80 | |
| 08 | 2D | |
| 09 | 26 | |
| 0A | FA | |
| 0B | F1 | |
| 0C | 30 | |
| 0D | 00 | |
| 0E | 58 | |
| 0F | 00 | |
| 10 | E0 | E0 |
| 11 | 8F | |
| 12 | 6C | |
| 13 | 36 | |
| 14 | 3C | |
| 15 | B6 | |
| 16 | 0D | |
| 17 | A3 | |
| 18 | 12 | |
| 19 | 8E | |
| 1A | 10 | |
| 1B | E2 | |
| 1C | 0C | 0C |
| 1D | 00 | 00 |
| 1E | 80 | |
| 1F | 80 | |
| 20 | 80 (79) | 80 (79) |
| 21 | 80 (79) | 80 (79) |
| 22 | 00 | 00 |
| 23 | 59 | 53 |
| 24 | 43 | 43 |
| 25 | A5 (B5) | A5 (B5) |
| 26 | 23 | 23 |
| 27 | 3A | 3A |
| 28 | A2 | A2 |
| 29 | 0B | 0B |

Table 7-1-2 (1).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 2A | 0C (2C) | 0C (2C) |
| 2B | 58 (50) | 58 (50) |
| 2C | FF | FF |
| 2D | 06 ((04)) | 06 ((04)) |
| 2E | 17 (16) | 17 (16) |
| 2F | 22 (27) 《29》 | 22 (27) 《29》 |
| 30 | 08 | 08 |
| 31 | 00 | 00 |
| 32 | 50 (47) 《48》 | 50 (47) 《48》 |
| 33 | 68 | 68 |
| 34 | 00 (02) | 00 (02) |
| 35 | 30 (50) | 30 (50) |
| 36 | 02 | 02 |
| 37 | 00 | 00 |
| 38 | 76 | 76 |
| 39 | 6A | 6A |
| 3A | 80 | 80 |
| 3B | 20 | 20 |
| 3C | F0 | F0 |
| 3D | 03 (02) | 03 (02) |
| 3E | 00 | |
| 3F | 00 | |
| 40 | 00 | |
| 41 | 00 | |
| 42 | 00 | |
| 43 | 00 | |
| 44 | 00 | |
| 45 | 00 | 00 |
| 46 | 00 | |
| 47 | 00 | |
| 48 | 00 | |
| 49 | 00 | |
| 4A | 00 | |
| 4B | 00 | |
| 4C | 00 | |
| 4D | 00 | |
| 4E | 00 | 00 |
| 4F | 20 | 20 |
| 50 | 05 (32) | 05 (32) |
| 51 | 02 | 02 |
| 52 | 66 | 66 |
| 53 | 18 | 18 |

Table 7-1-2 (2).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 54 | 66 (6B) | 66 (6B) |
| 55 | 9F | 9F |
| 56 | 66 | 66 |
| 57 | 66 (6C) | 66 (6C) |
| 58 | 59 (5C) | 59 (5C) |
| 59 | 83 | 83 |
| 5A | 67 | 67 |
| 5B | 5C | 5C |
| 5C | 5C | 5C |
| 5D | 4A | 4A |
| 5E | 1E (20) | 1E (20) |
| 5F | 5C | 5C |
| 60 | 3A (3C) | 3A (3C) |
| 61 | 33 | 33 |
| 62 | 0C | 0C |
| 63 | 26 | 26 |
| 64 | 04 | 04 |
| 65 | 02 | 02 |
| 66 | 00 | 00 |
| 67 | 00 | 00 |
| 68 | 00 | 00 |
| 69 | 00 | 00 |
| 6A | 00 | 00 |
| 6B | 00 | 00 |
| 6C | 00 | 00 |
| 6D | 00 | 00 |
| 6E | 00 | 00 |
| 6F | 34 | 34 |
| 70 | 10 | 10 |
| 71 | 26 | 26 |
| 72 | 0F | 0F |
| 73 | 0F | 0F |
| 74 | 00 | 00 |
| 75 | 23 | 23 |
| 76 | 1B | 1B |
| 77 | E0 | E0 |
| 78 | A0 | A0 |
| 79 | 30 | 30 |
| 7A | 10 | 10 |
| 7B | 50 | 50 |
| 7C | 58 | 58 |
| 7D | 88 | 88 |

Table 7-1-2 (3).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 7E | 66 | 66 |
| 7F | 46 | 46 |
| 80 | 8F | 8F |
| 81 | 13 | 13 |
| 82 | 30 | 30 |
| 83 | 60 | 60 |
| 84 | 70 | 70 |
| 85 | 80 | 80 |
| 86 | A0 | A0 |
| 87 | C0 | C0 |
| 88 | 70 | 70 |
| 89 | 78 | 78 |
| 8A | 80 | 80 |
| 8B | 90 | 90 |
| 8C | A0 | A0 |
| 8D | 40 | 40 |
| 8E | FF | FF |
| 8F | 00 | 00 |
| 90 | 00 〈11〉 | 00 〈11〉 |
| 91 | 77 | 77 |
| 92 | 00 | 00 |
| 93 | FB | FB |
| 94 | 02 | 02 |
| 95 | 32 | 32 |
| 96 | 6B | 6B |
| 97 | 8D | 8D |
| 98 | A1 | A1 |
| 99 | 30 | 30 |
| 9A | 30 | 30 |
| 9B | 21 | 21 |
| 9C | 72 | 72 |
| 9D | 00 | 00 |
| 9E | 00 | 00 |
| 9F | 00 | 00 |
| A0 | 00 | 00 |
| A1 | 00 | 00 |
| A2 | 00 | 00 |
| A3 | 02 | 02 |
| A4 | 80 | 80 |
| A5 | 00 | 00 |
| A6 | 80 | 80 |
| A7 | 00 | 00 |

Table 7-1-2 (4).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| A8 | 00 | 00 |
| A9 | 80 | 80 |
| AA | 00 | 00 |
| AB | 00 | 00 |
| AC | 02 | 02 |
| AD | 44 | 44 |
| AE | 3D | 3D |
| AF | 1B (25) | 1B (25) |
| B0 | 3D | 3D |
| B1 | 1B (25) | 1B (25) |
| B2 | A4 (A2) | A4 (A2) |
| B3 | 4B | 4B |
| B4 | 00 | 00 |
| B5 | 20 | 20 |
| B6 | 00 | 00 |
| B7 | 05 | 05 |
| B8 | 00 | 00 |
| B9 | 20 | 20 |
| BA | 00 | 00 |
| BB | 70 (6E) | 70 (6E) |
| BC | 35 (32) | 35 (32) |
| BD | 54 | 54 |
| BE | | |
| BF | | |
| C0 to EF | | |
| F0 | | |
| F1 | | |
| F2 | | |
| F3 | | |
| F4 | | |
| F5 | | |
| F6 | | |
| F7 | | |
| F8 | | |
| F9 | | |
| FA | | |
| FB | | |
| FC | | |
| FD | | |
| FE | | |
| FF | | |

Table 7-1-2 (5).

## 1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

### Hexadecimal notation-Decimal notation

| The lower digits of the hexadecimal notation<br>The upper digits of the hexadecimal notation | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A<br>(A) | B<br>(b) | C<br>(c) | ②<br>D<br>(d) | E<br>(E) | F<br>(F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **1** | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2** | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| **3** | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
| **4** | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| **5** | 80 | 80 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| **6** | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| **7** | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| **8** | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| **9** | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| **A (A)** | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| ① **B (b)** | 176 | 177 | 178 | 179 | 180 | 180 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| **C (c)** | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| **D (d)** | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| **E (E)** | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| **F (F)** | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

**Note:** ( ) indicate the adjusting remote control unit display.

**(Example)** In the case that the DDS display and the adjusting remote control unit display are BD ( b d ).
As the upper digit of the hexadecimal notation is B ( b ), and the lower digit is D ( d ), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-1-3.

# Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action or night views.

## Selecting the Best Mode

Select the best mode by using the following examples.

**Portrait mode**
- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming in on a subject in telephoto

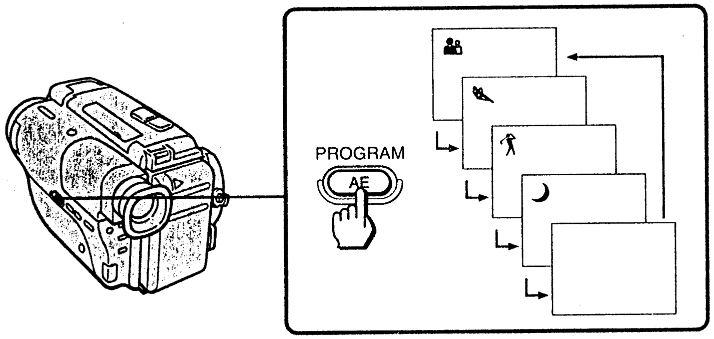
**Sports mode**
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape in a moving car

**High-speed shutter mode**
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in clear, sharp picture

**Twilight mode**
Recording night views neon signs or fireworks

## Using the PROGRAM AE Function

Press PROGRAM AE repeatedly so that the desired mode indicator appears inside the viewfinder.



**Note on shutter speed**
The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode – between 1/60 to 1/2000
Sports mode – between 1/60 to 1/500
High-speed shutter mode – 1/4000
Twilight mode – 1/60
Normal mode – 1/60

# Fade-in and Fade-out

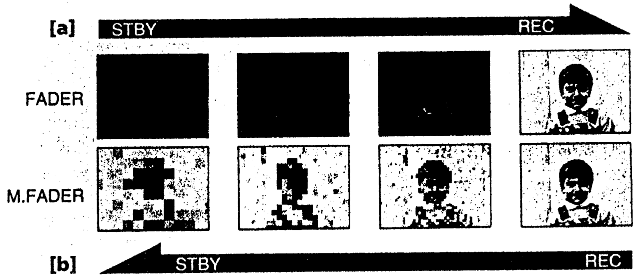
You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

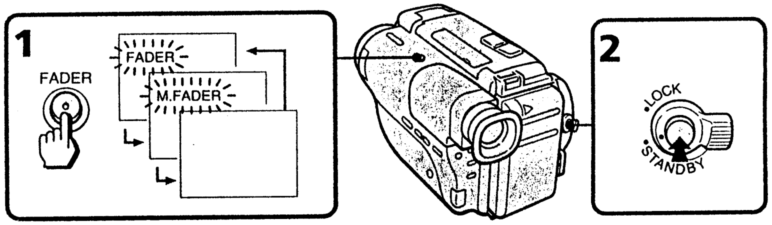
### When Fading in [a]

**(1)** During the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
**(2)** Press START/STOP to start recording. The fade indicator stops flashing.

### When Fading out [b]

**(1)** During recording, press FADER. The fade indicator starts flashing. **(2)** Press START/STOP to stop recording. The fade indicator stops flashing and recording stops.





**To Cancel the Fade-in/out Function**
Before pressing START/STOP, press FADER once or twice until the fade indicator disappears.

**When the date/time indicator is displayed**
The date/time does not fade in nor fade out.

1-11

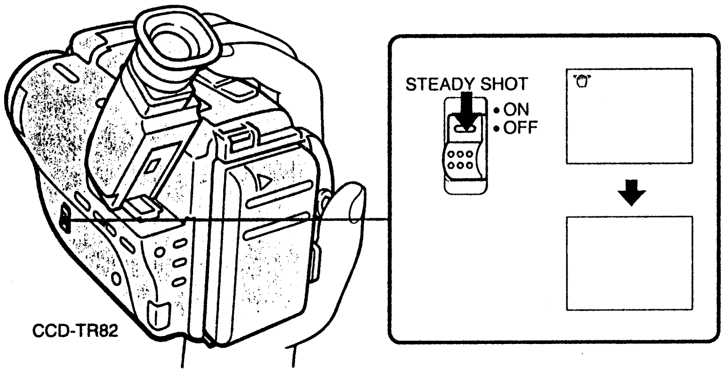
## Releasing the Steady Shot Function

### — For the model with the STEADY SHOT switch (CCD-TR82 only)

When you shoot, the ((◌)) indicator appears in the viewfinder. This indicates that the Steady Shot function is working and the camcorder compensates for camera-shake.

You can release the Steady Shot function. Do not use the Steady Shot function such as when shooting stationary object with a tripod.

Set STEADY SHOT to OFF.


CCD-TR82
STEADY SHOT
• ON
• OFF

### To Activate the Steady Shot Function Again

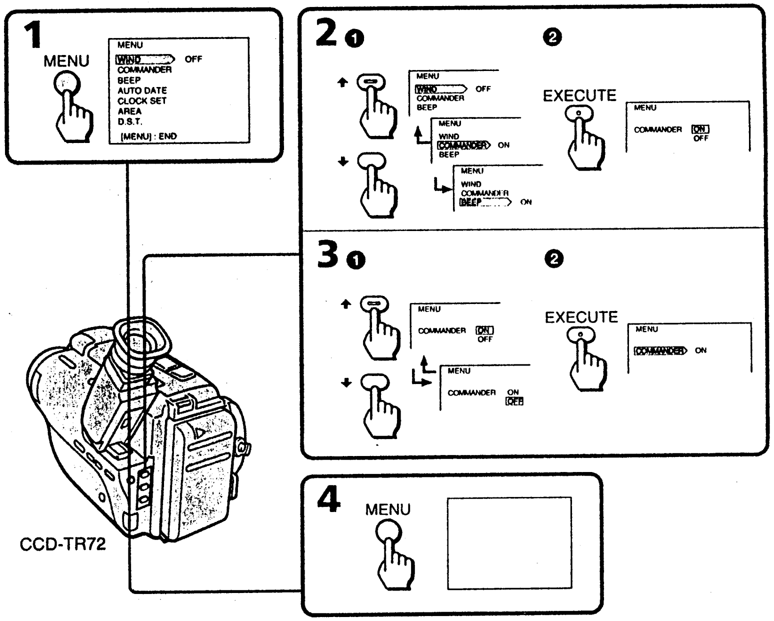
Set STEADY SHOT to ON.

**Notes on the Steady Shot Function**

- The Steady Shot function will not correct excessive camera-shake.
- When you switch the STEADY SHOT, the exposure may vary.

## Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions. **(1)** Press MENU to display the menu in the viewfinder. **(2)** Press ↑ or ↓ to select the desired item, then press EXECUTE. **(3)** Press ↑ or ↓ to set the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 2 and 3. **(4)** Press MENU to erase the menu display.


1
MENU
MENU
WIND OFF
COMMANDER
BEEP
AUTO DATE
CLOCK SET
AREA
D.S.T.
[MENU] : END
2 ❶
MENU
WIND OFF
COMMANDER
BEEP
MENU
WIND
COMMANDER ON
BEEP
MENU
WIND
COMMANDER
BEEP ON
❷
EXECUTE
MENU
COMMANDER ON
OFF
3 ❶
MENU
COMMANDER ON
OFF
MENU
COMMANDER ON
OFF
❷
EXECUTE
MENU
COMMANDER ON
4
MENU
CCD-TR72

### Note on BACK UP

When BACK UP indicator appears on the menu display, the settings of items are retained even when the battery is removed, as long as the lithium battery is in place.

## Selecting the Mode Setting of Each Item

### Common Items in CAMERA and PLAYER Modes

**COMMANDER <ON/OFF>**

- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander for the camcorder.

**BEEP <ON/OFF>**

- Select ON so that beeps sound when you start/stop recording.
- Select OFF when you do not want to hear the beep sound.

See the next page for further information.

### Items in CAMERA mode

**WIND <ON/OFF>**

— For stereo models (CCD-TR72/TR80)

- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

**AUTO DATE <ON/OFF>**

- Select ON to record the date of recording automatically (AUTO DATE feature p.12).
- Select OFF otherwise.

**CLOCK SET**

Select this item when you need to reset the clock (p.31).

**AREA**

Select the area number of the time zone where you will use the camcorder when you use the world clock (p.27).

**D.S.T. <ON/OFF>**

- Select ON to set the clock to Daylight Saving Time.
- Select OFF to set to standard time.

### Items in PLAYER mode

**EDIT <ON/OFF>**

- Select ON to minimize the picture deterioration when editing.
- Normally select OFF.

**HiFi SOUND <STEREO/1/2>**

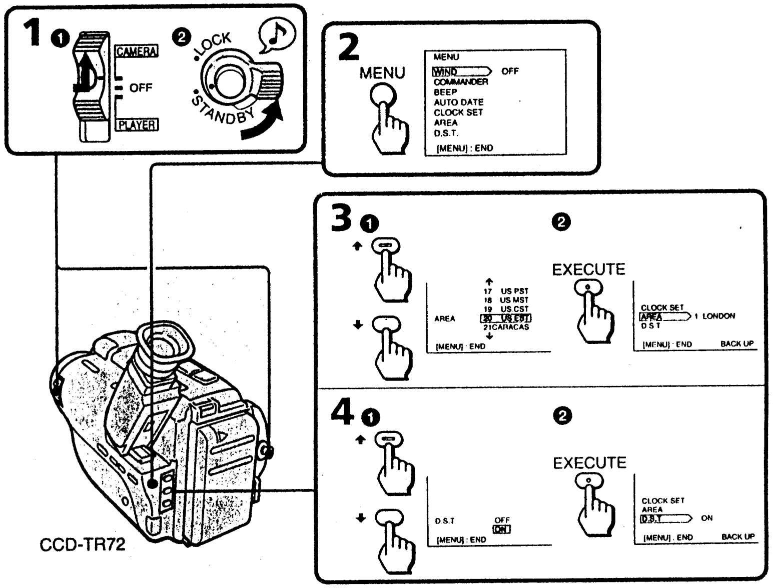
—For stereo models (CCD-TR72/TR80)

- Normally select STEREO.
- Select 1 or 2 to play back a dual soundtrack tape.

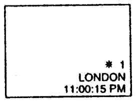
## Using the World Clock

Reset the clock according to the local time zone by setting AREA and D.S.T. modes in the menu system. First find the area number in the "Time zone chart" on page 28.

**(1)** Turn STANDBY up. **(2)** Press MENU to display the menu. **(3)** Select AREA item (p.26). Press ↑ or ↓ to select the area number where you will use the camcorder. Press EXECUTE. **(4)** Select D.S.T. item (p.26). Press ↑ or ↓ to select ON: for Daylight Saving Time or OFF: for standard time. Press EXECUTE.


1 ❶
CAMERA
OFF
PLAYER
❷
LOCK
STANDBY
2
MENU
MENU
WIND → OFF
COMMANDER
BEEP
AUTO DATE
CLOCK SET
AREA
D.S.T.
[MENU] : END
3 ❶
↑
↓
AREA
17 US PST
18 US MST
19 US CST
20 US EST
21 CARACAS
[MENU] : END
❷
EXECUTE
CLOCK SET
AREA → 1 LONDON
D.S.T
[MENU] : END
BACK UP
4 ❶
↑
↓
D.S.T
OFF
ON
[MENU] : END
❷
EXECUTE
CLOCK SET
AREA
D.S.T → ON
[MENU] : END
BACK UP
CCD-TR72

The area name appears in the viewfinder when using the world clock. The ☼ indicator appears in the viewfinder when setting to Daylight Saving Time.


✱ 1
LONDON
11:00:15 PM

### To Check the Date

Press DATE. To turn off the date indicator, press DATE again.

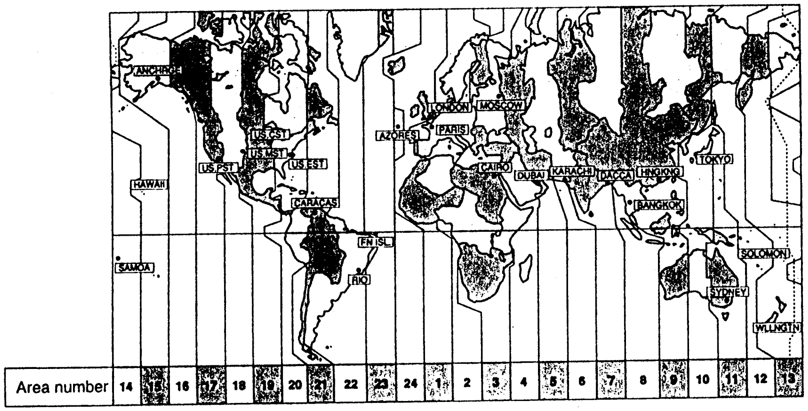
### To restore to Your Home Area Time

Reset the AREA mode in the menu system to your home area number.

See the next page for the Time Zone Chart.

## Changing the Mode Settings

### Time Zone Chart


ANCHRGE
US.CST
US.MST
US.PST
US.EST
HAWAII
SAMOA
CARACAS
FN ISL
RIO
AZORES
LONDON
PARIS
MOSCOW
CAIRO
DUBAI
KARACHI
DACCA
HNGKNG
BANGKOK
TOKYO
SOLOMON
SYDNEY
WLLNGTN
Area number
14
15
16
17
18
19
20
21
22
23
24
1
2
3
4
5
6
7
8
9
10
11
12
13

| Area number | Area name | Nations or area* |
|---|---|---|
| 1 | LONDON | England, GMT (Greenwich Mean Time), Morocco, Portugal |
| 2 | PARIS | Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CET |
| 3 | CAIRO | Egypt, Finland, Greece, Israel, Turkey |
| 4 | MOSCOW | Ethiopia, Iraq, Kenya, Saudi Arabia, former U.S.S.R. (west) |
| 5 | DUBAI | United Arab Emirates |
| 6 | KARACHI | Maldives, Pakistan |
| 7 | DACCA | Bangladesh, Myanmar |
| 8 | BANGKOK | Cambodia, Indonesia (Jakarta), Thailand, Vietnam |
| 9 | HNGKNG | Australia (west), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan |
| 10 | TOKYO | Japan, Korea |
| 11 | SYDNEY | Australia (east), Guam, Saipan |
| 12 | SOLOMON | New Caledonia |
| 13 | WLLNGTN | Fiji, New Zealand |
| 14 | SAMOA | Western Samoa |
| 15 | HAWAII | HST (Hawaii Standard Time), Tahiti |
| 16 | ANCHRGE | AST (Alaska Standard Time) |
| 17 | US. PST | PST (Pacific Standard Time) |
| 18 | US. MST | MST (Mountain Standard Time) |
| 19 | US. CST | CST (Central Standard Time), Mexico |
| 20 | US. EST | EST (East Standard Time), Peru |
| 21 | CARACAS | Chili, Dominica, Venezuela |
| 22 | RIO | Argentina, Brazil, Uruguay |
| 23 | FN ISL. | Fernando de Noronha |
| 24 | AZORES | Azores Islands |

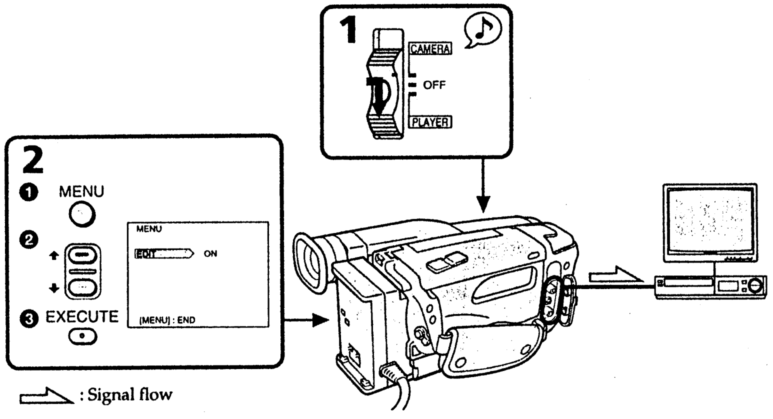
* These are common names. They may be different from formal country names.

## Editing onto Another Tape

You can create your own video program by editing with any other 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC, or Betamax VCR that has video/audio inputs.

### Before Editing

After connecting the camcorder to the VCR,
**(1)** Slide the POWER switch to PLAYER. **(2)** Set EDIT mode to ON in the menu system to minimise the picture deterioration (p.25).


1
CAMERA
OFF
PLAYER
2
❶ MENU
❷
❸ EXECUTE
MENU
EDIT ON
[MENU] : END
: Signal flow

### Starting Editing

**(1)** Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder. **(2)** Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode. **(3)** Set the recording VCR to recording pause mode. **(4)** Press ❙❙ on the camcorder and VCR simultaneously to start editing.

### To Edit More Scenes

Repeat steps 2 to 4.

### To Stop Editing

Press □ STOP on the camcorder and VCR. When you finish editing, reset EDIT mode to OFF (p.25).

#### Use of the EDITSEARCH button

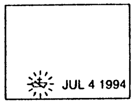
To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

#### Note on DISPLAY function

If you have displayed the viewfinder screen indicators on the TV (DISPLAY function), erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

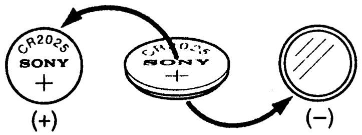
# Changing the Lithium Battery In the Camcorder

Your camcorder is supplied with the lithium battery installed. The lithium battery lasts for about 1 year under normal operation. When the battery becomes weak or dead, ⚠ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**



## Note on Lithium Battery

Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**

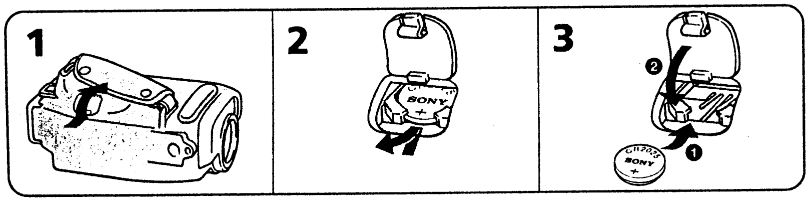

CR2025
SONY
+
(+)
(–)

**WARNING**
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

**Caution**
**Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.**

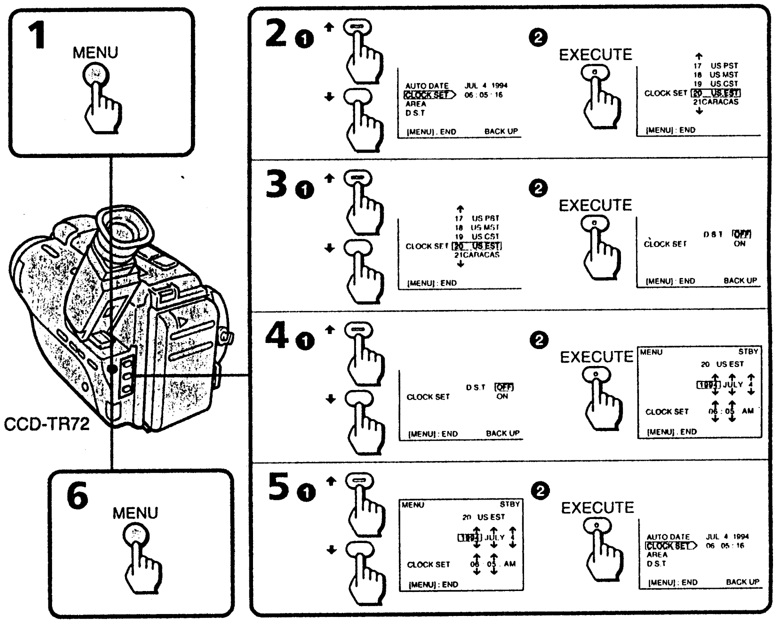
### Changing the Lithium Battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and the other items with BACK UP indicator in the menu system. **(1)** Open the lid of the lithium battery compartment. **(2)** Push the battery down once and pull it out from the holder. **(3)** Install the lithium battery with the positive (+) side facing out. Close the lid of the battery compartment.


1
2
SONY
3
❷
❶
CR2025
SONY

# Resetting the Date and Time

Reset the date and time in the menu system.
**(1)** Press MENU to display the menu. **(2)** Press ↑ or ↓ to select CLOCK SET item (p.26). Press EXECUTE. **(3)** Press ↑ or ↓ to select the area number where you will use the camcorder. Press EXECUTE. **(4)** Select D.S.T. ON for Daylight Saving Time or OFF for standard time. Press EXECUTE. **(5)** Set year, month, day, time, minute by pressing ↑, ↓ and EXECUTE. Note that when you keep ↑ and ↓ pressed, the digits advance faster. **(6)** Press MENU to erase the menu display.


1
MENU
CCD-TR72
6
MENU
2 ❶ ↑ ↓
AUTO DATE JUL 4 1994
CLOCK SET 06 : 05 : 16
AREA
D.S.T
[MENU] : END BACK UP
❷ EXECUTE
17 US PST
18 US MST
19 US CST
CLOCK SET 20 US EST
21 CARACAS
[MENU] : END
3 ❶ ↑ ↓
17 US PST
18 US MST
19 US CST
CLOCK SET 20 US EST
21 CARACAS
[MENU] : END
❷ EXECUTE
CLOCK SET D.S.T OFF ON
[MENU] : END BACK UP
4 ❶ ↑ ↓
CLOCK SET D.S.T OFF ON
[MENU] : END BACK UP
❷ EXECUTE
MENU STBY
20 US EST
1994 JULY 4
CLOCK SET 06 : 05 AM
[MENU] : END
5 ❶ ↑ ↓
MENU STBY
20 US EST
1994 JULY 4
CLOCK SET 06 : 05 AM
[MENU] : END
❷ EXECUTE
AUTO DATE JUL 4 1994
CLOCK SET 06 05 : 16
AREA
D.S.T
[MENU] : END BACK UP

### Time Zones and Area Numbers and Names

"S.T". in the following table stands for Standard Time.

| Time Zones | Area Name | Area Number |
|---|---|---|
| Hawaii S.T. | HAWAI | 15 |
| Alaska S.T. | ANCHRGE | 16 |
| Pacific S.T./West Canada | US.PST | 17 |
| Mountain S.T. | US.MST | 18 |
| Central S.T. | US.CST | 19 |
| Eastern S.T./East Canada | US.EST | 20 |

## Resetting the Date and Time

### To Correct the Date and Time Setting

Repeat steps 2 to 5.

### To Check the Date and Time

Press DATE to display the date indicator in the viewfinder. Press TIME to display the time indicator. When you press the same button again, the indicator goes out.

### To Reset to Standard Time

Change D.S.T. mode setting in the menu system (p.25).

### The year indicator changes as follows:

1994 ↔ 1995 ←----→ 2024
↑_____________________|

**Note on the time indicator**

The internal clock of the camcorder operates on a 12-hour cycle.
12:00:00 AM stands for midnight. 12:00:00 PM stands for noon.

## Playback Modes

The playback mode is selected automatically according to the recording system (SP/LP mode) in which the tape was recorded.

**Notes on AFM Hi-Fi stereo — For stereo models (CCD-TR72/TR80)**

When you play back the tape, the sound is in monaural if:

- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

**LP (long play) mode**

When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record tape in LP mode.

**Foreign 8 mm video**

You cannot play software recorded on a different TV color system. Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 39 to check the TV color system of foreign countries.

## Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

### Preparing the Battery Pack

### Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

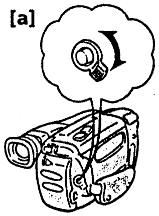
### Battery Life is Shorter in Cold Environment

Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

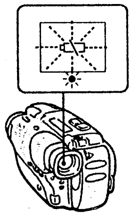
### To Save Battery Power

Turn the STANDBY switch on the camcorder down when not recording to save battery power. **[a]**
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

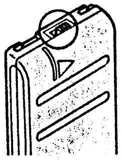
**[a]**



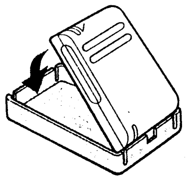
**[b]**



**[c]**



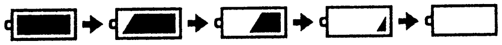
**[d]**



## Tips for Using the Battery Pack

### When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the i indicator appears and starts flashing in the viewfinder. **[b]** on page 33.
When the 🔋 indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

**Note on the remaining battery indicator**
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with the remaining battery indicator (not supplied). The indicator of the battery pack is more accurate.

### Notes on the Rechargeable Battery Pack

**The Battery Heats Up**
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

**Battery Care**
- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

**How to Use the Switch on the Battery Pack**
This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). **[c]** on page 33.

**The Life of the Battery Pack**
The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the 🔋 indicator flashes rapidly just after turning on the camcordrer with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

**Charging Temperature**
You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C ). Lower temperatures require a longer charging time.

### Notes on Charging

**A Brand-new Battery**
A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

**Before Recharging a Used Battery Pack**
- Make sure to use up the battery before recharging.
- If recording is completed before the 🔋 indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

**After Long Storage**
Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

### Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

**Be Sure to Observe the Following**
- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d] on page 33.**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

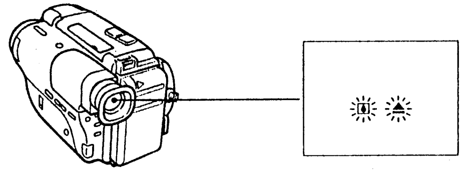
# Maintenance Information and Precautions

## Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

### Inside the Camcorder

When ◙ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.
**Eject the cassette turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.**
If the ◙ indicator does not light up when you turn on the power, you can use the camcorder again.



### On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert cassette and press a tape transport button (▶ PLAY, etc.), the ⏏ indicator flashes in the viewfinder. If this happens, none of the functions except cassette ejection will work.
**Eject the cassette and leave it for about 1 hour.**
If the ⏏ indicator does not light up when you insert the cassette and press a tape transport button, you can use the camcorder again.

### On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

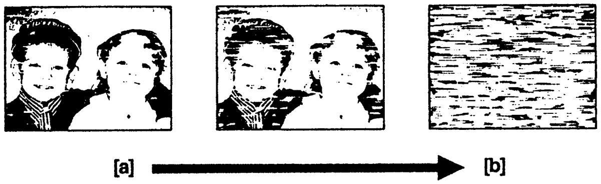
### How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

**(1)** Be sure to tightly seal the plastic bag containing the camcorder.
**(2)** Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

## Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



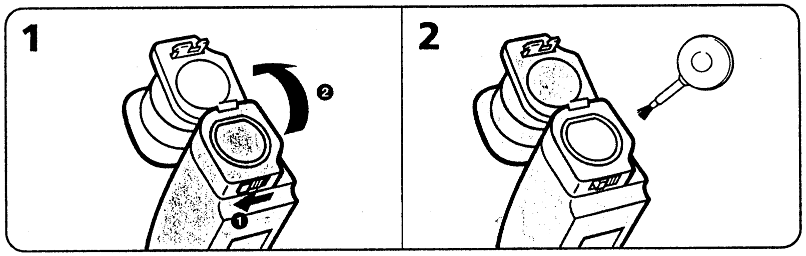
**[a]** Slight contamination
**[b]** Critical contamination
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

**Caution**
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

**Note**
If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

## Removing Dust from inside the Viewfinder

**(1)** While sliding the viewfinder release knob to the left, flip open the viewfinder. **(2)** Clean the surface with a commercially available blower.



## Maintenance Information and Precautions

### Precautions

**Camcorder Operation**

- Operate the camcorder using 6.0 V (battery pack), or 7.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by your nearest Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

**On Handling Tapes**

Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in.

**Camcorder Care**

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

**AC Power Adaptor**

**Charging**

- Use only for the specified battery pack. This unit cannot be used to charge an NP-500 series battery pack.
- Attach the battery pack firmly.
- Charge the battery pack on a flat surface without vibration.

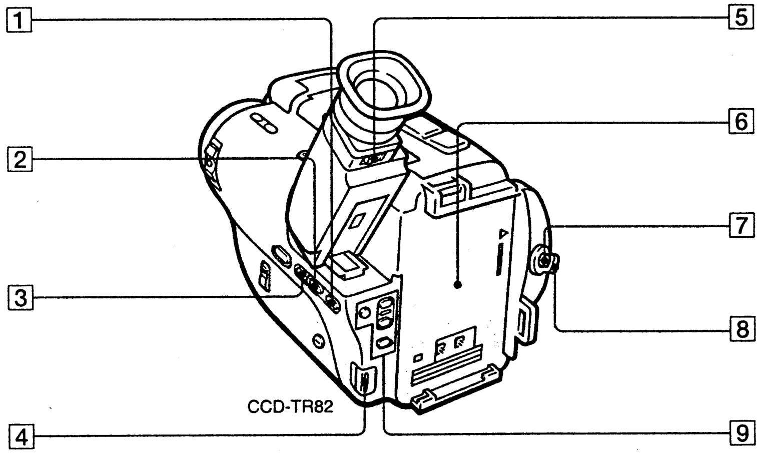
**Others**

- The model for USA or Canada: One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall (mains) outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

## Identifying the Parts

The illustrations in this section are of CCD-TR82.



1 **COUNTER RESET button** (p.12)

2 **TIME button** (p.20)

3 **DATE button** (p.20)

4 **BATT (battery) release knob** (p.8)

5 **Viewfinder release knob** (p.14, 37)

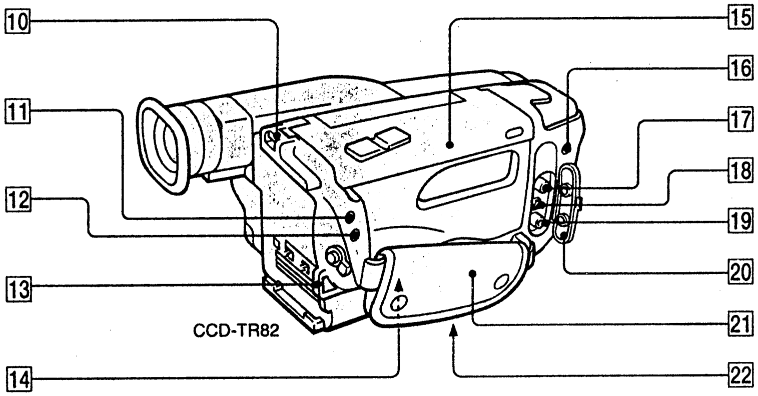
6 **Battery mounting surface** (p.8)

7 **START/STOP button** (p.11)

8 **STANDBY switch** (p.10, 11)

9 **Menu operation buttons** (p.25, 31)

## Identifying the Parts



[10] **Hook for shoulder strap** (below)

[11] **LANC ⓛ control jack**
Connect the LANC ⓛ connecting cable to a wired remote control unit such as an editing controller. In this case, set the COMMANDER mode to OFF in the menu system (p.25).
ⓛ stands for Local Application Control Bus sytem. The ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

[12] **◎ (earphone) jack (CCD-TR42/TR70/TR82)** (p.15)
**∩ (headphones) jack (CCD-TR72/TR80)** (p.15)

[13] **Hook for shoulder strap** (below)

[14] **Lithium battery compartment** (p.30)

[15] **Cassette compartment lid** (p.9)

[16] **MIC (microphone) jack**

[17] **VIDEO jack** (p.16)

[18] **RFU DC OUT (RFU adaptor DC out) jack** (p.16)

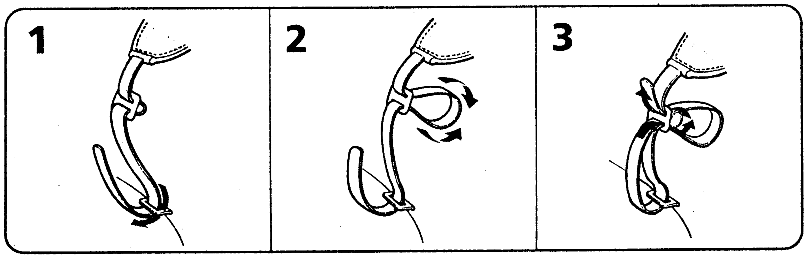
[19] **AUDIO jack** (p.16)

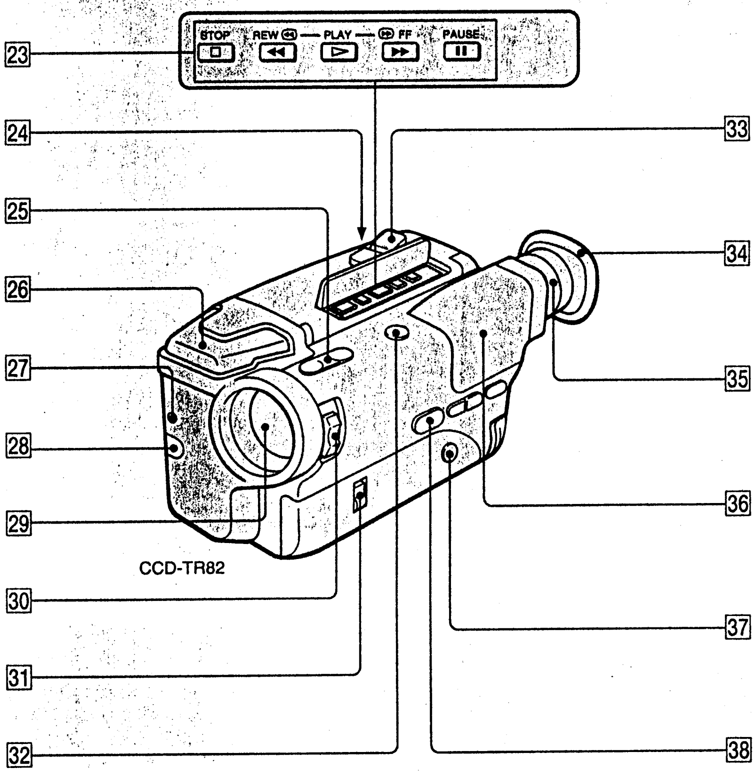
[20] **Jack cover**

[21] **Grip strap** (p.14)

[22] **Tripod receptacle** (p.14)
Attach a tripod (not supplied) here.
When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is shorter than 9/32 inches (6.5 mm). Otherwise, the screw might damage the inner part of the camcorder.

**Attaching the shoulder strap**
Attach the supplied shoulder strap to the hooks for the shoulder strap ([10], [13]).





[23] **Tape transport buttons** (p.17)
■ STOP
◁◁ REW (rewind)
▷ PLAY (playback)
▷▷ FF (fast forward)
❚❚ PAUSE
These buttons will function in PLAYER mode.

[24] **EJECT button** (p.9)

[25] **EDITSEARCH button** (p.15)

[26] **Built-in microphone**

[27] **Camera recording/battery lamp**

[28] **Remote sensor** (p.49)

[29] **Lens cover**

[30] **POWER switch** (p.10, 11)

[31] **STEADY SHOT switch** (p.24)

[32] **FADER button** (p.23)

[33] **POWER ZOOM button** (p.13)

[34] **Eyecup** (p.14)

[35] **Viewfinder adjustment ring** (p.10)

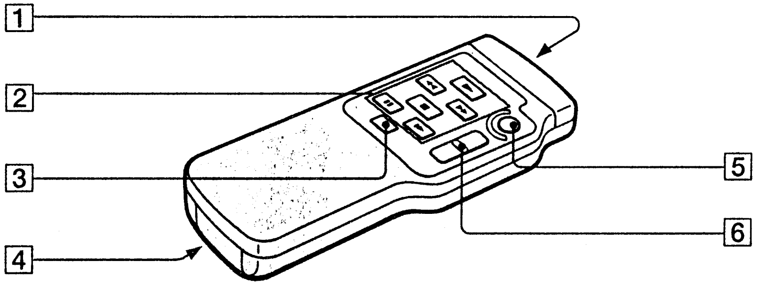
[36] **Viewfinder** (p.10, 14)

[37] **BACK LIGHT button** (p.21)

[38] **PROGRAM AE button** (p.22)

## Remote Commander

The buttons that have the same name on the Remote Commander and on the camcorder function identically.



1 **Transmitter** (p.49)
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 **Tape transport buttons** (p.17)

3 **DISPLAY button** (p.18)

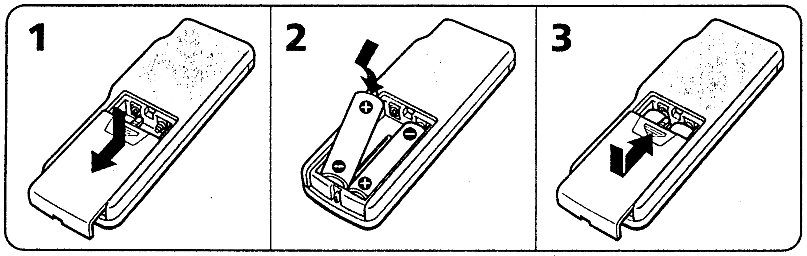
4 **Size AA (R6) battery holder**

5 **START/STOP button**

6 **Power zoom button**
The zooming speed is unchangeable on the Remote Commander.

## Preparing the Remote Commander

To use the Remote Commander, you must insert two size AA (R6) batteries. Use the supplied size AA (R6) batteries.
**(1)** Remove the battery cover from the Remote Commander. **(2)** Insert both of the size AA (R6) batteries with correct polarity. **(3)** Put the battery cover back onto the Remote Commander.

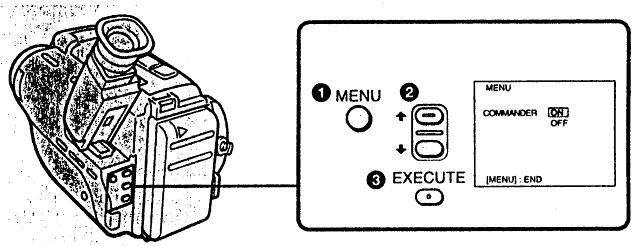


**Note on battery life**
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or daed, the Remote Commander does not work.

**To avoid damage from possible battery leakage**
Remove the batteries when you will not use the Remote Commander for a long time.

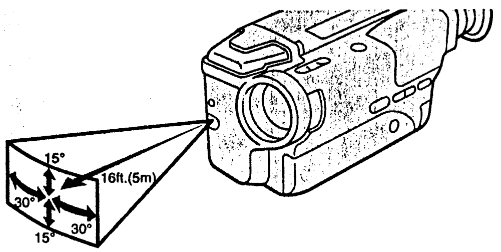
## Using the Remote Commander

Make sure that the COMMANDER mode is set to ON in the menu system (p.25).



## Remote Control Direction

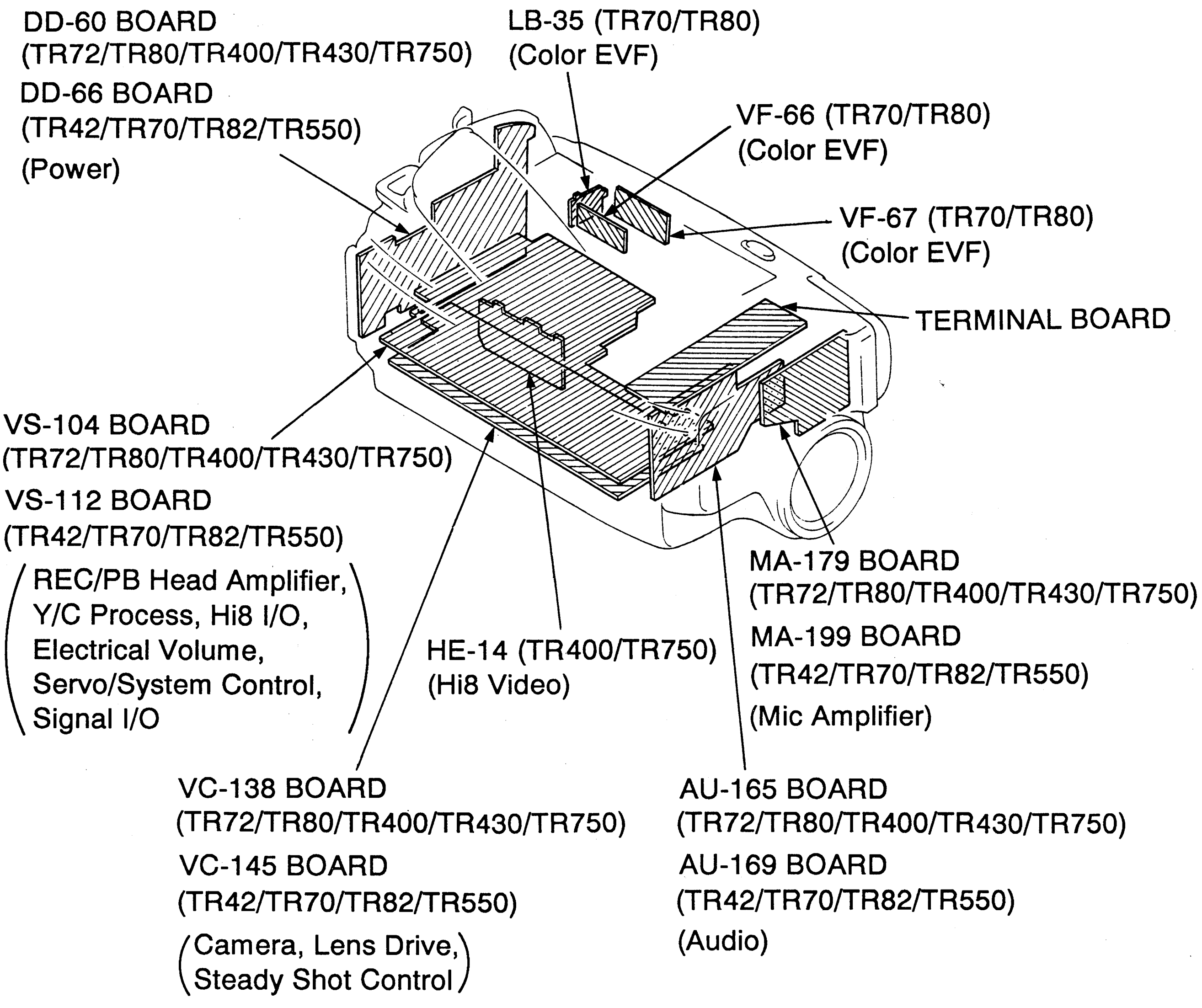
Aim the Remote Commander to the remote sensor within the range as shown below.

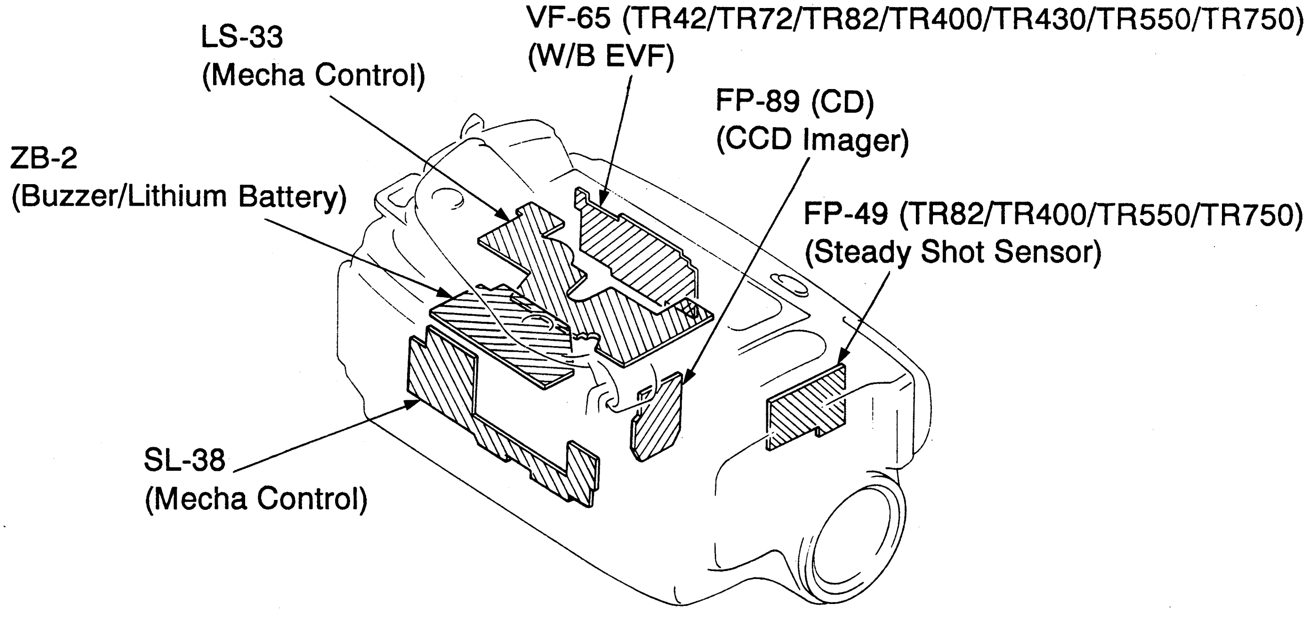


**Notes on the Remote Commander**

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2, and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

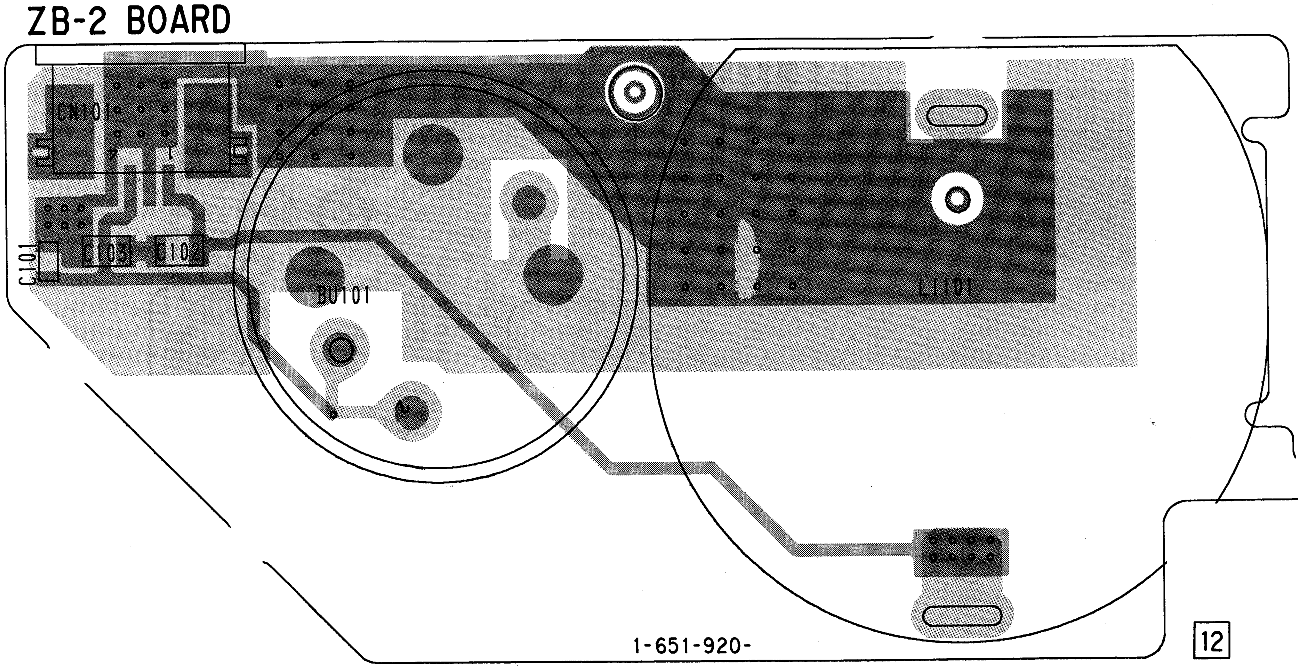
## 2-14. CIRCUIT BOARDS LOCATION


DD-60 BOARD
(TR72/TR80/TR400/TR430/TR750)
DD-66 BOARD
(TR42/TR70/TR82/TR550)
(Power)
LB-35 (TR70/TR80)
(Color EVF)
VF-66 (TR70/TR80)
(Color EVF)
VF-67 (TR70/TR80)
(Color EVF)
TERMINAL BOARD
VS-104 BOARD
(TR72/TR80/TR400/TR430/TR750)
VS-112 BOARD
(TR42/TR70/TR82/TR550)
(REC/PB Head Amplifier, Y/C Process, Hi8 I/O, Electrical Volume, Servo/System Control, Signal I/O)
HE-14 (TR400/TR750)
(Hi8 Video)
MA-179 BOARD
(TR72/TR80/TR400/TR430/TR750)
MA-199 BOARD
(TR42/TR70/TR82/TR550)
(Mic Amplifier)
VC-138 BOARD
(TR72/TR80/TR400/TR430/TR750)
VC-145 BOARD
(TR42/TR70/TR82/TR550)
(Camera, Lens Drive, Steady Shot Control)
AU-165 BOARD
(TR72/TR80/TR400/TR430/TR750)
AU-169 BOARD
(TR42/TR70/TR82/TR550)
(Audio)

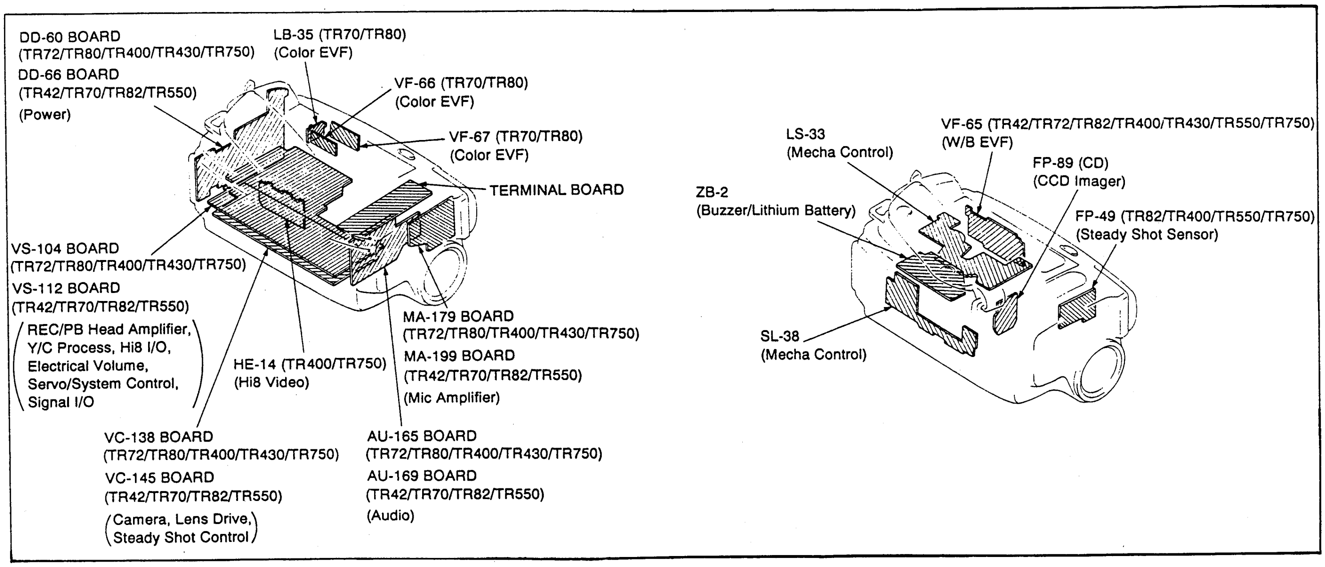

LS-33
(Mecha Control)
VF-65 (TR42/TR72/TR82/TR400/TR430/TR550/TR750)
(W/B EVF)
FP-89 (CD)
(CCD Imager)
ZB-2
(Buzzer/Lithium Battery)
FP-49 (TR82/TR400/TR550/TR750)
(Steady Shot Sensor)
SL-38
(Mecha Control)

## ZB-2 (BUZZER/LITHIUM BATTERY) PRINTED WIRING BOARD

— Ref. No. ZB-2 BOARD: 4000 series —

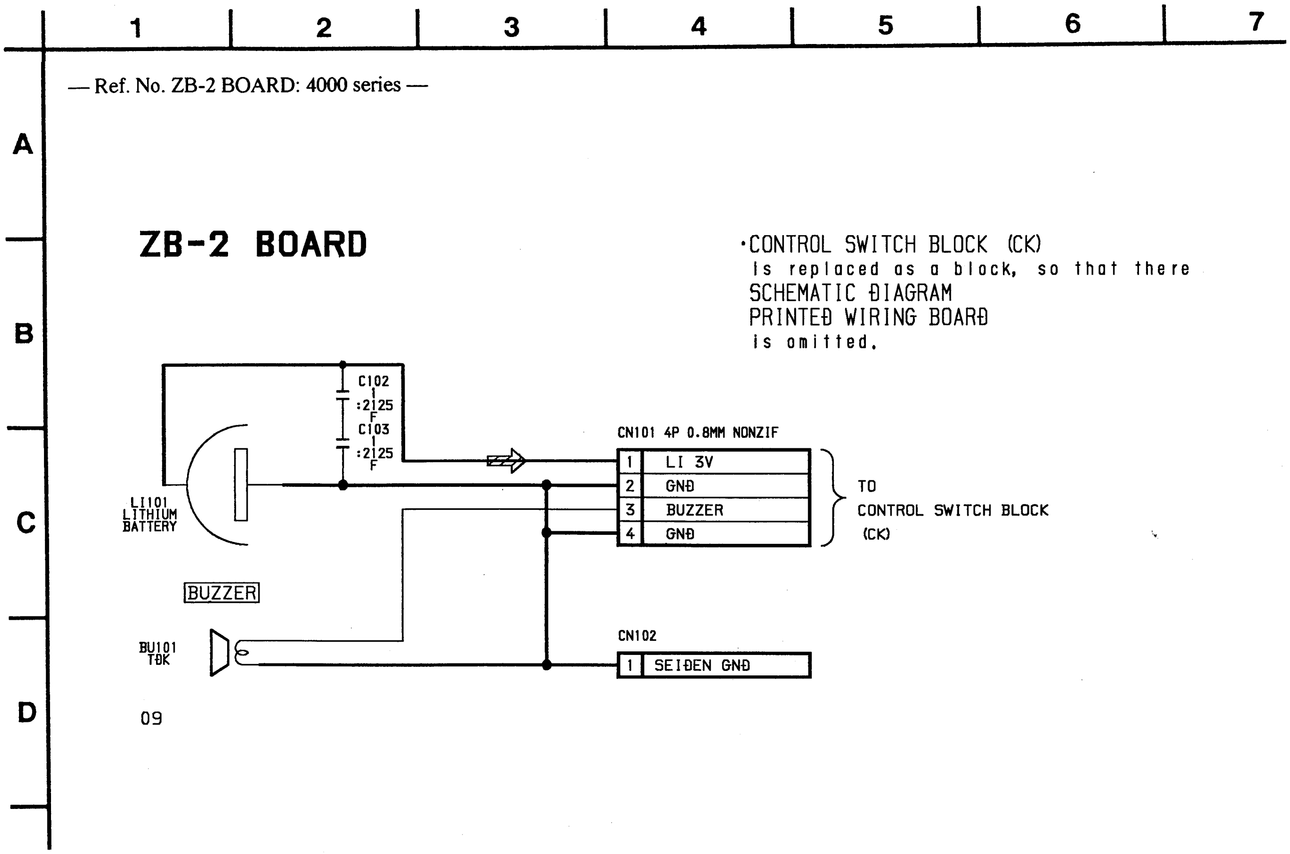

ZB-2 BOARD
CN101
C101
C103
C102
BU101
L1101
1-651-920-
12

- **For printed wiring board of ZB-2 board.**
- ▨ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.


DD-60 BOARD
(TR72/TR80/TR400/TR430/TR750)
DD-66 BOARD
(TR42/TR70/TR82/TR550)
(Power)
LB-35 (TR70/TR80)
(Color EVF)
VF-66 (TR70/TR80)
(Color EVF)
VF-67 (TR70/TR80)
(Color EVF)
TERMINAL BOARD
VS-104 BOARD
(TR72/TR80/TR400/TR430/TR750)
VS-112 BOARD
(TR42/TR70/TR82/TR550)
(REC/PB Head Amplifier, Y/C Process, Hi8 I/O, Electrical Volume, Servo/System Control, Signal I/O)
HE-14 (TR400/TR750)
(Hi8 Video)
MA-179 BOARD
(TR72/TR80/TR400/TR430/TR750)
MA-199 BOARD
(TR42/TR70/TR82/TR550)
(Mic Amplifier)
VC-138 BOARD
(TR72/TR80/TR400/TR430/TR750)
VC-145 BOARD
(TR42/TR70/TR82/TR550)
(Camera, Lens Drive, Steady Shot Control)
AU-165 BOARD
(TR72/TR80/TR400/TR430/TR750)
AU-169 BOARD
(TR42/TR70/TR82/TR550)
(Audio)
LS-33
(Mecha Control)
VF-65 (TR42/TR72/TR82/TR400/TR430/TR550/TR750)
(W/B EVF)
FP-89 (CD)
(CCD Imager)
ZB-2
(Buzzer/Lithium Battery)
FP-49 (TR82/TR400/TR550/TR750)
(Steady Shot Sensor)
SL-38
(Mecha Control)

## ZB-2 (BUZZER/LITHIUM BATTERY) SCHEMATIC DIAGRAM

— Ref. No. ZB-2 BOARD: 4000 series —



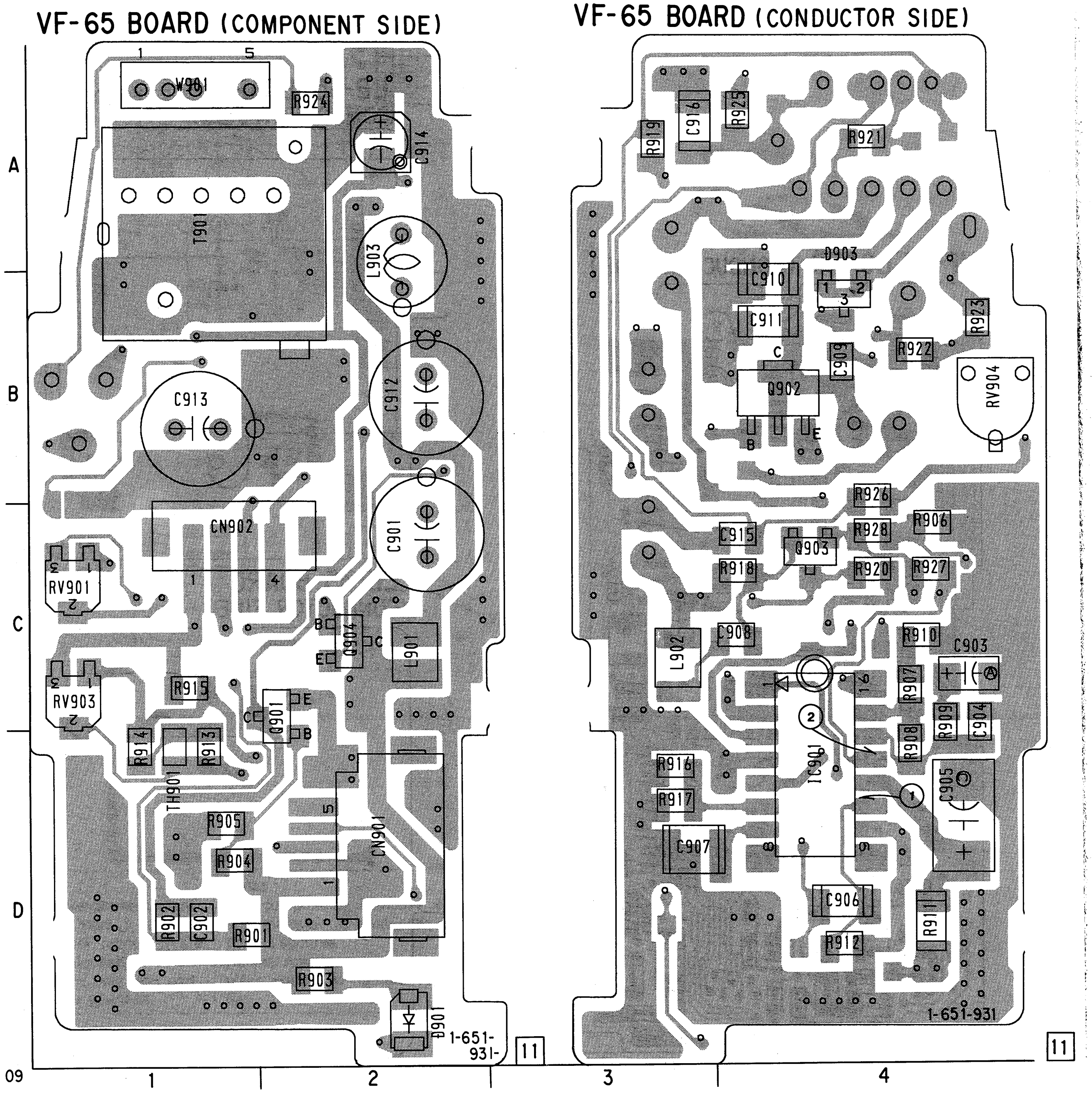
### ZB-2 BOARD

·CONTROL SWITCH BLOCK (CK)
is replaced as a block, so that there
SCHEMATIC DIAGRAM
PRINTED WIRING BOARD
is omitted.

1
2
3
4
5
6
7
A
B
C
D
C102
1
:2125
F
C103
1
:2125
F
CN101 4P 0.8MM NONZIF
1 LI 3V
2 GND
3 BUZZER
4 GND
TO
CONTROL SWITCH BLOCK
(CK)
LI101
LITHIUM
BATTERY
BUZZER
BU101
TDK
CN102
1 SEIDEN GND
09

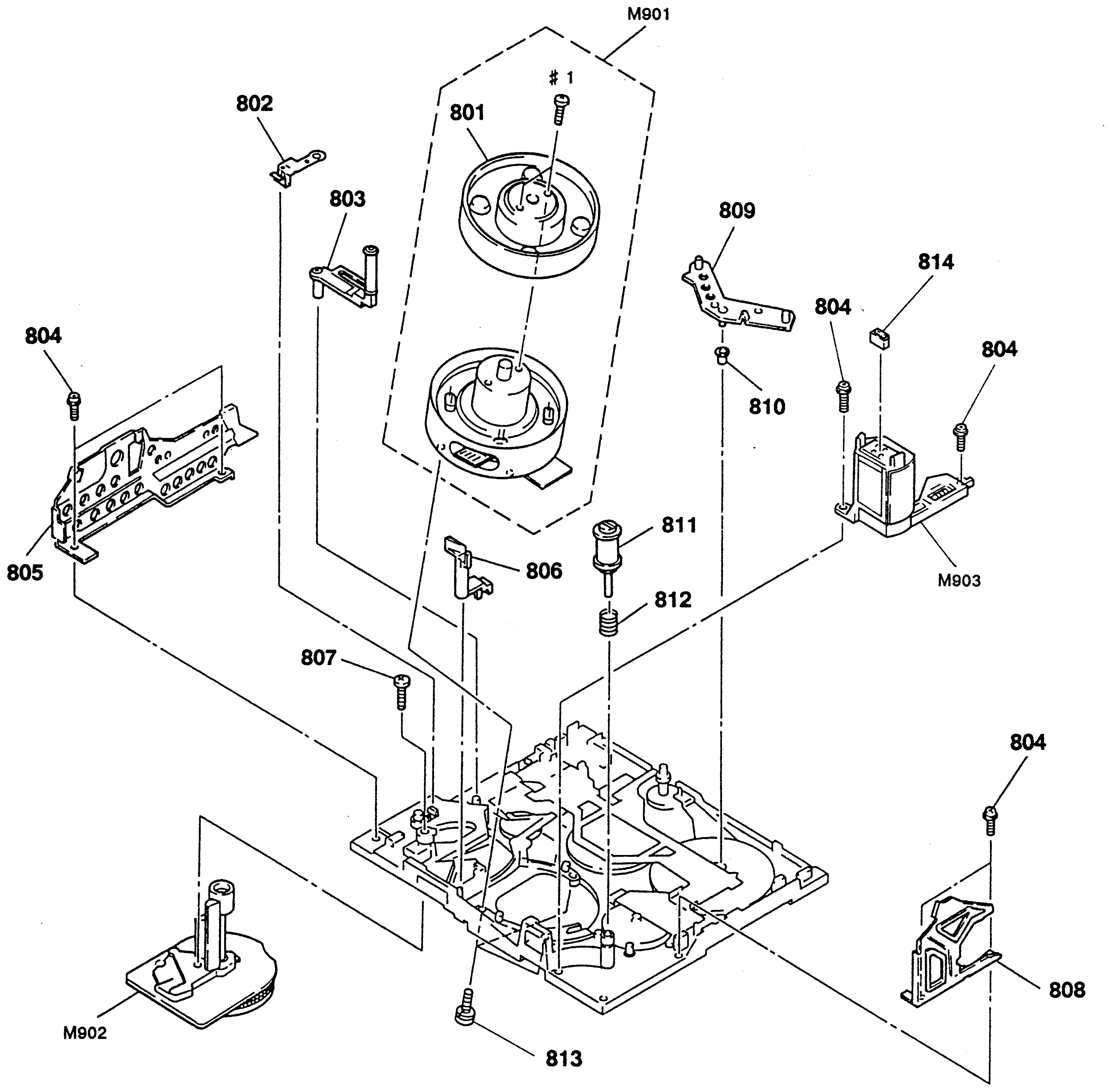
## VF-65 (W/B EVF) PRINTED WIRING BOARD (TR42/TR72/TR82/TR400/TR430/TR550/TR750)

— Ref. No. VF-65 BOARD: 8000 series —


VF-65 BOARD (COMPONENT SIDE)
VF-65 BOARD (CONDUCTOR SIDE)
A
B
C
D
09
1
2
3
4
W901
R924
C914
T901
L903
C913
C912
C901
CN902
RV901
RV903
R915
Q904
L901
Q901
R914
R913
TH901
R905
R904
CN901
R902
C902
R901
R903
D901
1-651-931
11
C916
R925
R919
R921
D903
C910
C911
C909
R923
R922
Q902
RV904
R926
R906
C915
R928
Q903
R918
R920
R927
L902
C908
R910
C903
R907
R909
C904
R908
IC901
R916
R917
C905
C907
C906
R911
R912
B
C
E

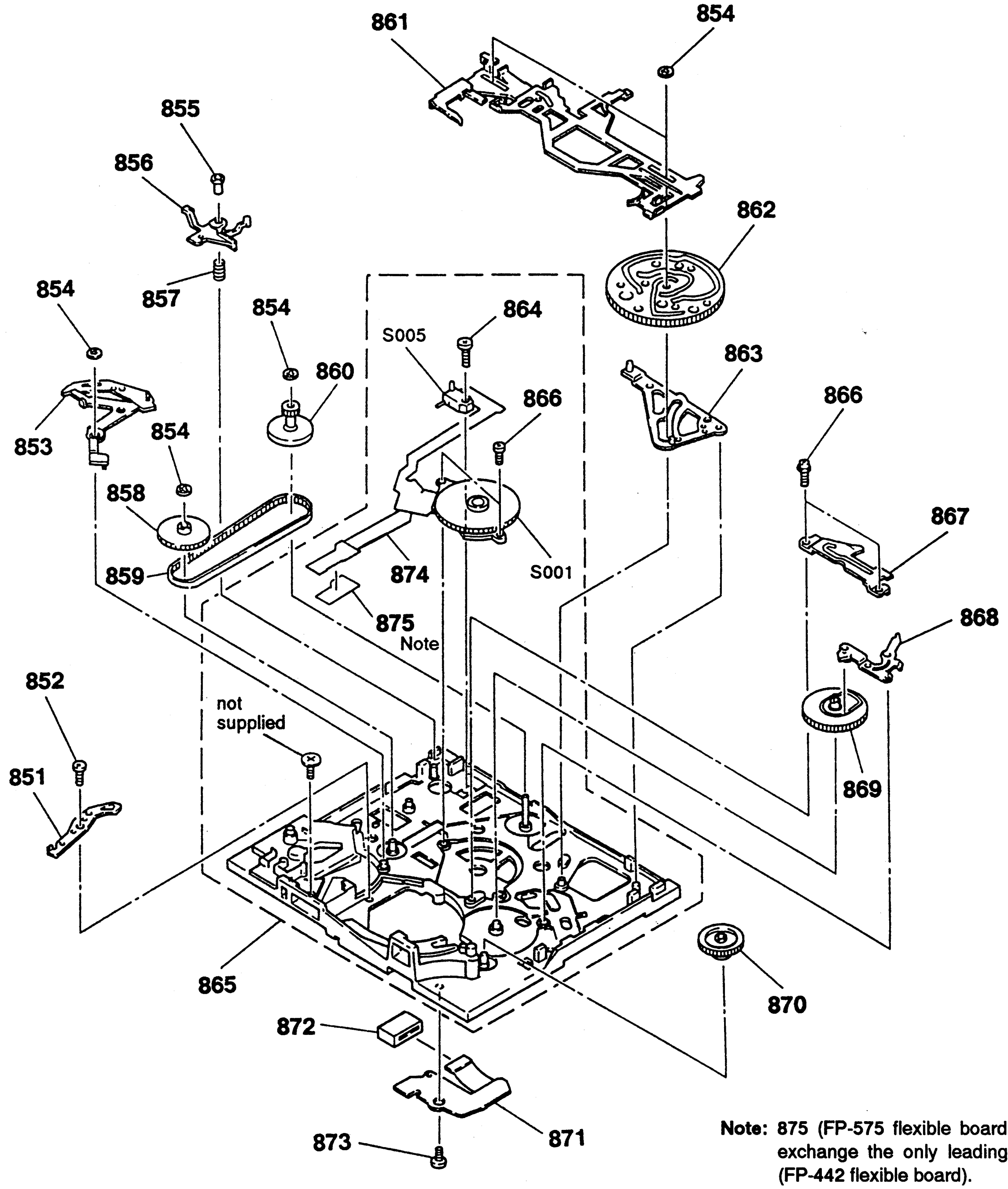
- **For printed wiring boards.**
- VF-65 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

## 5-1-10. MECHANISM CHASSIS ASSEMBLY (1)



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 801 | A-7049-501-A | DRUM ASSY, UPPER (DGR-78-R) (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| 801 | A-7049-567-A | DRUM ASSY, UPPER (DGR-92-R)(TR400/TR750) | |
| 802 | 3-945-822-01 | SPRING, LEAF, TG7 ARM | |
| 803 | A-7040-305-A | ARM BLOCK ASSY, TG7 | |
| 804 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 805 | X-3941-255-1 | PLATE (T) ASSY, SIDE | |
| 806 | 3-945-735-01 | ARM, HC CONVERSION | |
| 807 | 3-713-786-71 | SCREW (M2X5) | |
| 808 | 3-945-691-01 | PLATE (S), SIDE | |
| 809 | 3-945-701-01 | ARM, LS | |
| 810 | 3-945-702-01 | ROLLER, LS | |
| 811 | X-3941-262-1 | ROLLER ASSY, TG2 | |
| 812 | 3-956-651-01 | SPRING, COMPRESSION | |
| 813 | 3-686-493-01 | SCREW (M2X5), P1 | |
| 814 | 1-568-323-11 | CONNECTOR, BOARD TO BOARD 4P | |
| M901 | A-7048-564-A | DRUM ASSY (DGH-78A-R) (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| M901 | A-7048-633-A | DRUM ASSY (DGH-92A-R)(TR400/TR750) | |
| M902 | 8-835-477-12 | MOTOR, DC SCE-0101A (CAPSTAN) | |
| M903 | A-7040-304-A | MOTOR BLOCK ASSY, LM (LOADING) | |

## 5-1-11. MECHANISM CHASSIS ASSEMBLY (2)


861
854
855
856
862
854
857
854
864
S005
863
860
866
866
853
854
858
867
859
874
S001
875
Note
868
852
not supplied
851
869
865
870
872
871
873

**Note:** 875 (FP-575 flexible board) is part that exchange the only leading part of 874 (FP-442 flexible board).

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 851 | 3-945-734-01 | ARM, HC DRIVING | |
| 852 | 3-728-103-11 | SCREW (M1.4X1.6), SPECIAL HEAD | |
| 853 | X-3941-259-1 | ARM ASSY, PINCH PRESS | |
| 854 | 3-726-829-01 | WASHER, STOPPER | |
| 855 | 3-945-730-01 | SLEEVE, EJECT | |
| 856 | 3-945-706-01 | LEVER, EJECT | |
| 857 | 3-945-729-01 | SPRING, COMPRESSION | |
| 858 | X-3941-256-1 | GEAR ASSY, CHANGE | |
| 859 | 3-944-539-01 | BELT, RELAY | |
| 860 | 3-945-695-01 | PULLEY, RELAY | |
| 861 | X-3941-260-1 | SLIDER ASSY, M | |
| 862 | 3-945-696-02 | CAM | |
| 863 | X-3941-258-1 | ARM ASSY, GL | |
| 864 | 3-713-786-71 | SCREW (M2X5) | |
| 865 | A-7040-303-A | CHASSIS ASSY, MECHANICAL | |
| 866 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 867 | 3-945-722-01 | RETAINER, GEAR | |
| 868 | X-3941-257-1 | ARM ASSY, FF | |
| 869 | 3-945-697-01 | GEAR (B), L | |
| 870 | 3-945-700-01 | GEAR (A), L | |
| 871 | 1-641-643-12 | FP-444 FLEXIBLE BOARD | |
| 872 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | |
| 873 | 3-945-756-01 | SCREW (M1.4X3) | |
| 874 | 1-641-639-13 | FP-442 FLEXIBLE BORD | |
| 875 | 1-645-271-11 | FP-575 FLEXIBLE BORD | |
| S001 | 1-572-986-11 | SWITCH, ROTARY (ENCODER) | |
| S005 | 1-570-771-21 | SWITCH (C DOWN) | |

## 5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Canadian model is abbreviated as CND.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-7063-958-A | AU-165 BOARD, COMPLETE | | | |
| | | ********************** | | | |
| | | (TR72/TR80/TR400/TR430/TR750) | | | |
| | | (Ref. No. 10,000 Series) | | | |
| | | < CAPACITOR > | | | |
| C1302 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1303 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1304 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1305 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1306 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1307 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1308 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1309 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1310 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1311 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1312 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1313 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C1314 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C1315 | 1-126-209-11 | ELECT | 100uF | 20% | 4V |
| C1316 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1318 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1319 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C1321 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1323 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1326 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1327 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1328 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C1329 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C1330 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1331 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1332 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1333 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1334 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1335 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1336 | 1-135-148-21 | TANTAL. CHIP | 1.5uF | 20% | 10V |
| C1337 | 1-135-148-21 | TANTAL. CHIP | 1.5uF | 20% | 10V |
| C1338 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1339 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1340 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1341 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1343 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1344 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C1345 | 1-162-967-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C1346 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1347 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1348 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1349 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1350 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1352 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1353 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1355 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1356 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1357 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1358 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1359 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1360 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1361 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1362 | 1-162-969-11 | CERAMIC CHIP | 0.0068uF | 10% | 25V |
| C1363 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1364 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| | | < CONNECTOR > | | | |
| CN1301 | 1-691-490-21 | CONNECTOR, FFC/FPC 11P | | | |
| * CN1302 | 1-691-933-11 | CONNECTOR, BOARD TO BOARD 34P | | | |
| | | < DIODE > | | | |
| D1302 | 8-719-404-46 | DIODE MA110 | | | |
| D1303 | 8-719-045-87 | DIODE MA4Z082WA-TX | | | |
| D1304 | 8-719-045-87 | DIODE MA4Z082WA-TX | | | |
| | | < FILTER > | | | |
| FL402 | 1-236-838-21 | FILTER, BAND PASS (1.7MHz) | | | |
| FL1302 | 1-236-837-21 | FILTER, BAND PASS (1.5MHz) | | | |
| | | < IC > | | | |
| IC402 | 8-759-234-77 | IC TC4S66F | | | |
| IC1301 | 8-759-159-94 | IC LA7491W-TBM | | | |
| | | < TRANSISTOR > | | | |
| Q1301 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |
| Q1302 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |
| Q1303 | 8-729-403-35 | TRANSISTOR UN5113 | | | |
| Q1305 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |
| Q1306 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q1311 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | |
| Q1312 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1313 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q1315 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1316 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | |
| Q1317 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | |
| Q1318 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q1319 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q1320 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | |
| Q1321 | 8-729-420-12 | TRANSISTOR XN4213 | |
| Q1322 | 8-729-420-12 | TRANSISTOR XN4213 | |

< RESISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R1301 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R1302 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1303 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R1304 | 1-216-810-11 | METAL CHIP 120 5% 1/16W | |
| R1305 | 1-216-810-11 | METAL CHIP 120 5% 1/16W | |
| R1306 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1307 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1308 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1309 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1312 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R1316 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R1317 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1318 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1321 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1322 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1323 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R1324 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1325 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1330 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1331 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1334 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R1335 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R1336 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1337 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R1338 | 1-216-863-11 | METAL GLAZE 3.3M 5% 1/16W | |
| R1340 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1341 | 1-216-863-11 | METAL GLAZE 3.3M 5% 1/16W | |
| R1342 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1346 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1347 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1348 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R1349 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1350 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R1351 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1352 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1353 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1354 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1355 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1356 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1357 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1358 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1359 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1360 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1361 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R1362 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1363 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1364 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1365 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1366 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1367 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1368 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1369 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1370 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1371 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R1372 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1373 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1375 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1376 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1381 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |

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* A-7063-952-A AU-169 BOARD, COMPLETE
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(TR42/TR70/TR82/TR550)
(Ref. No. 5,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C402 | 1-165-176-11 | CERAMIC CHIP 0.047uF 10% 16V | |
| C403 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C404 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C405 | 1-164-677-11 | CERAMIC CHIP 0.033uF 10% 16V | |
| C407 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C408 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C409 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C411 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C412 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C413 | 1-126-209-11 | ELECT 100uF 20% 4V | |
| C414 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C415 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C416 | 1-162-951-11 | CERAMIC CHIP 68PF 5% 50V | |
| C418 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C419 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C421 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C422 | 1-164-674-11 | CERAMIC CHIP 1800PF 5% 16V | |
| C423 | 1-164-471-11 | CERAMIC CHIP 680PF 5% 50V | |
| C424 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C425 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C426 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C428 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C429 | 1-128-013-11 | ELECT CHIP 1uF 20% 50V | |
| C430 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C431 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C432 | 1-164-674-11 | CERAMIC CHIP 1800PF 5% 16V | |
| C433 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |
| C434 | 1-128-003-11 | ELECT CHIP 22uF 20% 4V | |
| C435 | 1-162-966-11 | CERAMIC CHIP 0.0022uF 10% 50V | |
| C436 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C437 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C438 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C439 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C440 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C441 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C442 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN401 | 1-691-516-11 | CONNECTOR, BOARD TO BOARD 24P | |
| CN402 | 1-691-487-21 | CONNECTOR, FFC/FPC 8P | |

< DIODE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D402 | 8-719-045-87 | DIODE MA4Z082WA-TX | |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC401 | 8-759-823-19 | IC CXA1488RR | |

< COIL >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L401 | 1-412-954-11 | INDUCTOR 18uH | |

< TRANSISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q402 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q403 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q404 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q405 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q406 | 8-729-403-35 | TRANSISTOR UN5113 | |

< RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R401 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R402 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R403 | 1-216-859-11 | METAL GLAZE 1.5M 5% 1/16W | |
| R404 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R407 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R409 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R410 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R411 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R412 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R413 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | |
| R415 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R416 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R417 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R418 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R419 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R420 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R421 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R423 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R424 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R425 | 1-216-810-11 | METAL CHIP 120 5% 1/16W | |
| R427 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R428 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R429 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R430 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R431 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R432 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R433 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R434 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R435 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R436 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |

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* A-7063-960-A DD-60 BOARD, COMPLETE (TR72/TR400/TR430/TR750)
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* A-7066-009-A DD-60 BOARD, COMPLETE (TR80)
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* A-7063-954-A DD-66 BOARD, COMPLETE (TR42/TR82/TR550)
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* A-7066-006-A DD-66 BOARD, COMPLETE (TR70)
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(Ref. No. 9,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C901 | 1-163-989-11 | CERAMIC CHIP 0.033uF 10% 25V | |
| C902 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C903 | 1-163-121-00 | CERAMIC CHIP 150PF 5% 50V | |
| C904 | 1-163-121-00 | CERAMIC CHIP 150PF 5% 50V | |
| C906 | 1-164-245-11 | CERAMIC CHIP 0.015uF 10% 25V | |
| C907 | 1-162-963-11 | CERAMIC CHIP 680PF 10% 50V | |
| C908 | 1-162-963-11 | CERAMIC CHIP 680PF 10% 50V | |
| C909 | 1-162-963-11 | CERAMIC CHIP 680PF 10% 50V | |
| C910 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C911 | 1-162-963-11 | CERAMIC CHIP 680PF 10% 50V | |
| C912 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C913 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C914 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C915 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |
| C916 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C917 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C918 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C920 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C921 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C923 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C924 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C925 | 1-164-337-11 | CERAMIC CHIP 2.2uF | 16V |
| C926 | 1-164-337-11 | CERAMIC CHIP 2.2uF | 16V |
| C927 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C928 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C929 | 1-135-216-11 | TANTALUM CHIP 10uF 20% | 10V |
| C930 | 1-107-418-11 | ELECT CHIP 10uF 20% | 35V |
| C931 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C932 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C934 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C935 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C936 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C937 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C938 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C939 | 1-163-023-00 | CERAMIC CHIP 0.015uF 5% | 50V |
| C940 | 1-163-023-00 | CERAMIC CHIP 0.015uF 5% | 50V |
| C941 | 1-163-019-00 | CERAMIC CHIP 0.0068uF 10% | 50V |
| C942 | 1-163-009-11 | CERAMIC CHIP 0.001uF 10% | 50V |
| C943 | 1-163-019-00 | CERAMIC CHIP 0.0068uF 10% | 50V |
| C944 | 1-164-161-11 | CERAMIC CHIP 0.0022uF 10% | 100V |
| C945 | 1-128-530-11 | ELECT CHIP 33uF 20% | 10V |
| C950 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |

< CONNECTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| CN901 | 1-695-324-11 | CONNECTOR, BOARD TO BOARD 42P | |

< DIODE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| D900 | 8-719-045-87 | DIODE MA4Z082WA | |
| D901 | 8-719-027-77 | DIODE MA796 | |
| D902 | 8-719-045-87 | DIODE MA4Z082WA | (TR72/TR80/TR400/TR430/TR750) |
| D909 | 8-719-404-49 | DIODE MA111 | |
| D910 | 8-719-404-49 | DIODE MA111 | |

< FUSE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠F450 | 1-576-213-11 | FUSE, CHIP (1.6A 125V) | |
| ⚠F451 | 1-576-213-11 | FUSE, CHIP (1.6A 125V) | |
| ⚠F452 | 1-576-213-11 | FUSE, CHIP (1.6A 125V) | |

< IC >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| IC901 | 8-759-249-14 | IC MB3799-02PFV-GBND-ER | |

< JACK >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| J901 | 1-537-281-41 | TERMINAL BOARD (BATTERY) | |
| J902 | 1-565-276-21 | JACK, ULTRA SMALL 1P (REMOTE) | |
| J903 | 1-568-027-11 | JACK, SMALL TYPE 1P (EARPHONE) | (TR42/TR70/TR82/TR550) |
| J903 | 1-569-809-11 | JACK (SMALL TYPE)(HEADPHONES) | (TR72/TR80/TR400/TR430/TR750) |

< COIL >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| L901 | 1-424-653-11 | COIL, CHOKE 10uH | |
| L902 | 1-424-653-11 | COIL, CHOKE 10uH | |
| L903 | 1-424-653-11 | COIL, CHOKE 10uH | |
| L904 | 1-409-556-11 | COIL, CHOKE 47uH | |
| L905 | 1-424-674-11 | COIL, CHOKE 22uH | |
| L906 | 1-409-556-11 | COIL, CHOKE 47uH | |
| L907 | 1-424-674-11 | COIL, CHOKE 22uH | |
| L908 | 1-424-674-11 | COIL, CHOKE 22uH | |
| L909 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L910 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L911 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L912 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L913 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L914 | 1-412-064-11 | INDUCTOR CHIP 100uH | |
| L915 | 1-412-064-11 | INDUCTOR CHIP 100uH | |
| L916 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L917 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |

< TRANSISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q900 | 8-729-421-90 | TRANSISTOR XN4113 | (TR70/TR80) |
| Q901 | 8-729-420-12 | TRANSISTOR XN4213 | |
| Q902 | 8-729-804-41 | TRANSISTOR 2SB1122 | |
| Q903 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q904 | 8-729-823-84 | TRANSISTOR FP102 | |
| Q905 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q906 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q907 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q908 | 8-729-420-12 | TRANSISTOR XN4213 | (TR70/TR80) |
| Q909 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q910 | 8-729-429-32 | TRANSISTOR UN9210-QRS | (TR70/TR80) |
| Q911 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q912 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q914 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q915 | 8-729-402-42 | TRANSISTOR UN5213 | |

< RESISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R901 | 1-218-872-11 | METAL CHIP 11K 0.50% 1/16W | |
| R902 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R903 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R904 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R905 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R906 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R907 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| R908 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R909 | 1-216-031-00 | METAL CHIP 180 5% 1/10W | |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R910 | 1-216-029-00 | METAL CHIP 150 5% 1/10W | |
| R911 | 1-216-029-00 | METAL CHIP 150 5% 1/10W | |
| R912 | 1-216-029-00 | METAL CHIP 150 5% 1/10W | |
| R913 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R915 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R918 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R919 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R920 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R921 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| R922 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R923 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| R924 | 1-412-979-21 | INDUCTOR 1uH | |
| R925 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R926 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R931 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R932 | 1-412-979-21 | INDUCTOR 1uH | |
| R933 | 1-412-979-21 | INDUCTOR 1uH | (TR72/TR80/TR400/TR430/TR750) |
| R934 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R936 | 1-412-979-21 | INDUCTOR 1uH | |
| R937 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R938 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R939 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R940 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R941 | 1-218-849-11 | METAL CHIP 1.2K 0.50% 1/16W | |
| R942 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R943 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R944 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R945 | 1-218-847-11 | METAL CHIP 1K 0.50% 1/16W | |
| R946 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR70/TR80) |
| R947 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | (TR70/TR80) |
| R948 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR70/TR80) |
| R949 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR70/TR80) |
| | | < TRANSFORMER > | |
| T901 | 1-426-730-11 | TRANSFORMER, CONVERTER | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | 1-651-890-11 | FP-49 FLEXIBLE BOARD<br>******************** | (TR82/TR400/TR550/TR750)<br>(Ref. No. 3,000 Series) |
| | | < SENSOR > | |
| SE691 | 1-810-024-31 | SENSOR, ANGULAR VELOCITY | |
| SE692 | 1-810-024-41 | SENSOR, ANGULAR VELOCITY | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7072-004-A | FP-89 (CD) BOARD, COMPLETE<br>************************** | (TR82/TR400/TR550/TR750) |
| * | A-7072-005-A | FP-89 (CD) BOARD, COMPLETE<br>************************** | (TR42/TR70/TR72/TR80/TR430)<br>(Ref. No. 3,000 Series) |
| | | < CAPACITOR > | |
| C691 | 1-135-214-21 | TANTAL. CHIP 4.7uF 20% 20V | |
| C692 | 1-135-210-11 | TANTALUM CHIP 4.7uF 20% 10V | |
| C694 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |
| C695 | 1-164-156-11 | CERAMIC CHIP 0.1uF 25V | |
| C696 | 1-104-908-11 | TANTAL. CHIP 47uF 20% 4V | |
| | | < IC > | |
| IC691 | A-7030-368-A | CCD BLOCK ASSY (AUTO)(054 SERVICE) | (CCD IMAGER)(TR42/TR70/TR72/TR80/TR430) |
| IC691 | A-7030-373-A | CCD BLOCK ASSY (AUTO)(059V SERVICE) | (CCD IMAGER)(TR82/TR400/TR550/TR750) |
| | | < COIL > | |
| L691 | 1-412-963-11 | INDUCTOR 100uH | |
| | | < TRANSISTOR > | |
| Q691 | 8-729-232-86 | TRANSISTOR 2SK1875-BL/V | |
| Q692 | 8-729-117-73 | TRANSISTOR 2SC4178-F14 | |
| | | < RESISTOR > | |
| R691 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R692 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R693 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R693 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R694 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R694 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R695 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | (TR82/TR400/TR550/TR750) |

**Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.**

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R695 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R696 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R697 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |

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* A-7066-078-A HE-14 BOARD, COMPLETE (TR400/TR750)

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(Ref. No. 20,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C1101 | 1-162-917-11 | CERAMIC CHIP 15PF 5% 50V | |
| C1102 | 1-162-918-11 | CERAMIC CHIP 18PF 5% 50V | |
| C1103 | 1-162-917-11 | CERAMIC CHIP 15PF 5% 50V | |
| C1104 | 1-162-918-11 | CERAMIC CHIP 18PF 5% 50V | |
| C1106 | 1-162-919-11 | CERAMIC CHIP 22PF 5% 50V | |
| C1107 | 1-162-975-11 | CERAMIC CHIP 24PF 5% 50V | |
| C1108 | 1-162-923-11 | CERAMIC CHIP 47PF 5% 50V | |
| C1109 | 1-162-928-11 | CERAMIC CHIP 120PF 5% 50V | |
| C1110 | 1-162-910-11 | CERAMIC CHIP 5PF 0.25PF 50V | |
| C1111 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1112 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1113 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C1114 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1115 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1116 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1117 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1118 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1119 | 1-162-919-11 | CERAMIC CHIP 22PF 5% 50V | |
| C1121 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1122 | 1-164-218-11 | CERAMIC CHIP 180PF 0.25PF 50V | |
| C1123 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C1124 | 1-162-925-11 | CERAMIC CHIP 68PF 5% 50V | |
| C1125 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1126 | 1-162-925-11 | CERAMIC CHIP 68PF 5% 50V | |
| C1127 | 1-162-910-11 | CERAMIC CHIP 5PF 0.25PF 50V | |
| C1128 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1129 | 1-162-925-11 | CERAMIC CHIP 68PF 5% 50V | |
| C1130 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1131 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1132 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1133 | 1-162-919-11 | CERAMIC CHIP 22PF 5% 50V | |
| C1134 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1135 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1136 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1137 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1138 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1140 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1141 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1142 | 1-164-392-11 | CERAMIC CHIP 390PF 5% 50V | |
| C1143 | 1-162-912-11 | CERAMIC CHIP 7PF 0.5PF 50V | |
| C1144 | 1-162-918-11 | CERAMIC CHIP 18PF 5% 50V | |
| C1146 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1150 | 1-162-913-11 | CERAMIC CHIP 8PF 0.5PF 50V | |
| C1151 | 1-162-917-11 | CERAMIC CHIP 15PF 5% 50V | |
| C1152 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C1155 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1156 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C1157 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1158 | 1-162-922-11 | CERAMIC CHIP 39PF 5% 50V | |
| C1160 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C1161 | 1-164-218-11 | CERAMIC CHIP 180PF 0.25PF 50V | |
| C1162 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C1163 | 1-162-941-11 | CERAMIC CHIP 10PF 0.5PF 50V | |
| C1164 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1165 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C1166 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C1167 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1168 | 1-162-959-11 | CERAMIC CHIP 330PF 5% 50V | |
| C1169 | 1-164-155-11 | CERAMIC CHIP 75PF 5% 50V | |
| C1171 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C1173 | 1-162-952-11 | CERAMIC CHIP 82PF 5% 50V | |
| C1175 | 1-162-955-11 | CERAMIC CHIP 150PF 5% 50V | |
| C1176 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C1178 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C1179 | 1-162-943-11 | CERAMIC CHIP 15PF 5% 50V | |
| C1181 | 1-164-218-11 | CERAMIC CHIP 180PF 0.25PF 50V | |
| C1182 | 1-162-955-11 | CERAMIC CHIP 150PF 5% 50V | |
| C1183 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1184 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1185 | 1-164-149-11 | CERAMIC CHIP 36PF 5% 50V | |
| C1188 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1189 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C1192 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C1193 | 1-164-218-11 | CERAMIC CHIP 180PF 0.25PF 50V | |

< CONNECTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * CN1101 | 1-573-341-11 | CONNECTOR, BOARD TO BOARD 26P | |

< DIODE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| D1101 | 8-719-404-49 | DIODE MA111 | |
| D1102 | 8-719-027-48 | DIODE MA142WA | |
| D1103 | 8-719-027-48 | DIODE MA142WA | |
| D1105 | 8-719-404-49 | DIODE MA111 | |

< FILTER >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| FL1101 | 1-236-775-11 | FILTER, LOW PASS (DEM) | |
| FL1102 | 1-239-112-21 | FILTER, LOW PASS (Y) | |

< IC >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| IC1101 | 8-752-058-02 | IC CXA1509AR | |

# HE-14

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC1102 | 8-759-070-51 | IC SN74HCU04ADB | |
| | | < COIL > | |
| L1101 | 1-412-956-21 | INDUCTOR 27uH | |
| L1102 | 1-412-954-11 | INDUCTOR 18uH | |
| L1103 | 1-412-947-11 | INDUCTOR 4.7uH | |
| L1104 | 1-412-959-11 | INDUCTOR 47uH | |
| L1105 | 1-412-954-11 | INDUCTOR 18uH | |
| L1106 | 1-412-945-11 | INDUCTOR 3.3uH | |
| L1108 | 1-412-954-11 | INDUCTOR 18uH | |
| L1109 | 1-412-948-11 | INDUCTOR 5.6uH | |
| L1110 | 1-412-956-21 | INDUCTOR 27uH | |
| L1111 | 1-410-655-31 | INDUCTOR CHIP 120uH | |
| L1112 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L1113 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L1114 | 1-412-957-11 | INDUCTOR 33uH | |
| L1115 | 1-412-952-11 | INDUCTOR 12uH | |
| L1116 | 1-412-948-11 | INDUCTOR 5.6uH | |
| L1118 | 1-412-953-11 | INDUCTOR 15uH | |
| L1119 | 1-412-949-21 | INDUCTOR 6.8uH | |
| L1121 | 1-412-947-11 | INDUCTOR 4.7uH | |
| L1122 | 1-412-954-11 | INDUCTOR 18uH | |
| L1123 | 1-412-949-21 | INDUCTOR 6.8uH | |
| L1124 | 1-412-960-21 | INDUCTOR 56uH | |
| | | < TRANSISTOR > | |
| Q1102 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1103 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1107 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1110 | 8-729-120-28 | TRANSISTOR 2SC1623 | |
| Q1111 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q1113 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1114 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q1115 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1117 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1118 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1119 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1120 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q1121 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q1123 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1125 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q1126 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1127 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q1128 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1129 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1131 | 8-729-824-02 | TRANSISTOR 2SA1838 | |
| Q1132 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1133 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1134 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1137 | 8-729-230-63 | TRANSISTOR 2SC4116 | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q1138 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| | | < RESISTOR > | |
| R1101 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1102 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1103 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1104 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1105 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1106 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R1107 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R1108 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R1109 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R1111 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1112 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1113 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1114 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1115 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1116 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1118 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1119 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | |
| R1120 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1123 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1124 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1125 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R1127 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1128 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1130 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1131 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1132 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1134 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1135 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R1136 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1138 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1139 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1148 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1149 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R1151 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1152 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1153 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R1154 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1155 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1156 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1157 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1158 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1159 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1160 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1161 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1162 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R1163 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1164 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R1165 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R1166 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R1167 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1168 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1169 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R1170 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R1171 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R1172 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1173 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1174 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R1175 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R1176 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1177 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R1178 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R1179 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1180 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1182 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1183 | 1-216-811-11 | METAL CHIP 150 5% 1/16W | |
| R1184 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1186 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1187 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R1188 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1189 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1190 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | |
| R1191 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1194 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1196 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1197 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1198 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1199 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1202 | 1-216-811-11 | METAL CHIP 150 5% 1/16W | |
| R1203 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1204 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R1205 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1206 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1207 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R1209 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1210 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R1214 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1215 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1216 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1217 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1218 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1219 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1220 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1221 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1223 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1226 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7056-012-A | LB-35 BOARD, COMPLETE (TR70/80)<br>*********************<br>(Ref. No. 4,000 Series) | |
| | | < CONNECTOR > | |
| CN801 | 1-573-812-11 | CONNECTOR, BOARD TO BOARD 12P | |
| | | < DIODE > | |
| D801 | 8-719-037-83 | DIODE LN1371G-(TR) | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | LS-33 BOARD<br>*********** | |
| | | < DIODE > | |
| D001 | 8-719-989-52 | DIODE GL4600S | |
| | | < HALL > | |
| H001 | 8-719-987-62 | DIODE LT140SAZ | |
| H002 | 8-719-987-62 | DIODE LT140SAZ | |
| | | < TRANSISTOR > | |
| Q001 | 8-729-012-46 | TRANSISTOR PT4600FS | |
| Q002 | 8-729-012-46 | TRANSISTOR PT4600FS | |
| | | < RESISTOR > | |
| R003 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R004 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R010 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R011 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| | | < SWITCH > | |
| S002 | 1-572-987-11 | SWITCH, PUSH (3 KEY) | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-962-A | MA-179 BOARD, COMPLETE<br>**********************<br>(TR72/TR80/TR400/TR430/TR750)<br>(Ref. No. 7,000 Series) | |
| | | < CAPACITOR > | |
| C001 | 1-164-343-11 | CERAMIC CHIP 0.056uF 10% 25V | |
| C003 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C005 | 1-163-023-00 | CERAMIC CHIP 0.015uF 5% 50V | |
| C006 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C007 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C008 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C009 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C010 | 1-135-091-21 | TANTAL. CHIP 1uF 20% 16V | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C011 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C012 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C013 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C014 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C015 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C019 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C020 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C021 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C022 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C023 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C024 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C025 | 1-163-023-00 | CERAMIC CHIP | 0.015uF | 5% | 50V |
| C026 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C027 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C030 | 1-164-343-11 | CERAMIC CHIP | 0.056uF | 10% | 25V |
| C043 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |

< CONNECTOR >

| | | |
|---|---|---|
| CN001 | 1-691-490-21 | CONNECTOR, FFC/FPC 11P |
| CN002 | 1-580-057-11 | PIN, CONNECTOR 4P |
| CN003 | 1-580-057-11 | PIN, CONNECTOR 4P |

< DIODE >

| | | | |
|---|---|---|---|
| D001 | 8-719-404-46 | DIODE | MA110 |
| D002 | 8-719-404-46 | DIODE | MA110 |
| D004 | 8-719-404-19 | DIODE | LN1251C (TALLY) |

< IC >

| | | | |
|---|---|---|---|
| IC001 | 8-759-084-53 | IC | CXA1618AN-E2 |
| IC002 | 8-749-923-29 | IC | RS-20E-T |

< JACK >

| | | |
|---|---|---|
| J001 | 1-691-737-11 | JACK (SMALL TYPE)(EXT MIC) |

< COIL >

| | | |
|---|---|---|
| L001 | 1-412-939-11 | INDUCTOR 1uH |
| L002 | 1-412-939-11 | INDUCTOR 1uH |
| L003 | 1-412-939-11 | INDUCTOR 1uH |

< TRANSISTOR >

| | | | |
|---|---|---|---|
| Q001 | 8-729-230-63 | TRANSISTOR | 2SC4116-YG |
| Q003 | 8-729-402-42 | TRANSISTOR | UN5213 |

< RESISTOR >

| | | | | | |
|---|---|---|---|---|---|
| R003 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R004 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R005 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R006 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W |
| R007 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R008 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R009 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R010 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R011 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R012 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R013 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R014 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R015 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R016 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R017 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R018 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R019 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R020 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R022 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R023 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R024 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R025 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R027 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R036 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R037 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R039 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W |
| R043 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W |

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* A-7063-956-A MA-199 BOARD, COMPLETE

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(TR42/TR70/TR82/TR550)
(Ref. No. 5,000 Series)

< CAPACITOR >

| | | | | | |
|---|---|---|---|---|---|
| C014 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C015 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C032 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C033 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C034 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C035 | 1-162-587-11 | CERAMIC CHIP | 0.039uF | 10% | 25V |
| C036 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C037 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C040 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C041 | 1-164-345-11 | CERAMIC CHIP | 0.082uF | 10% | 25V |
| C043 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |

< CONNECTOR >

| | | |
|---|---|---|
| CN001 | 1-691-487-21 | CONNECTOR, FFC/FPC 8P |
| CN003 | 1-580-057-11 | PIN, CONNECTOR 4P |

< DIODE >

| | | | |
|---|---|---|---|
| D001 | 8-719-404-49 | DIODE | MA111 |
| D002 | 8-719-404-49 | DIODE | MA111 |
| D004 | 8-719-404-19 | DIODE | LN1251C (TALLY) |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < IC > | |
| IC002 | 8-749-923-29 | IC RS-20ET | |
| IC003 | 8-759-822-37 | IC LA7293M-TE | |
| | | < COIL > | |
| L002 | 1-412-939-11 | INDUCTOR 1uH | |
| L003 | 1-412-939-11 | INDUCTOR 1uH | |
| | | < JACK > | |
| J001 | 1-568-027-11 | JACK, SMALL TYPE 1P (EXT MIC) | |
| | | < TRANSISTOR > | |
| Q002 | 8-729-402-63 | TRANSISTOR 2SB1218A-Q | |
| | | < RESISTOR > | |
| R027 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R028 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R029 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R030 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R031 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R032 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R033 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R043 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R044 | 1-216-853-11 | METAL CHIP 470K 5% 1/16W | |

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* A-7072-000-A SL-38 BOARD, COMPLETE
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(Ref. No. 4,000 Series)

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < CAPACITOR > | |
| C543 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C544 | 1-135-211-11 | TANTAL. CHIP 6.8uF 20% 6.3V | |
| C545 | 1-135-211-11 | TANTAL. CHIP 6.8uF 20% 6.3V | |
| C546 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C547 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C551 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C553 | 1-164-361-11 | CERAMIC CHIP 0.047uF 16V | |
| C554 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C555 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C556 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C557 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| C558 | 1-164-489-11 | CERAMIC CHIP 0.22uF 10% 16V | |
| | | < CONNECTOR > | |
| CN500 | 1-691-473-21 | CONNECTOR, FFC/FPC 7P | |
| CN501 | 1-691-472-21 | CONNECTOR, FFC/FPC 6P | |
| CN502 | 1-691-482-21 | CONNECTOR, FFC/FPC 15P | |
| | | < IC > | |
| IC507 | 8-759-165-47 | IC MPC1780VFUEB | |
| | | < COIL > | |
| L505 | 1-414-078-11 | INDUCTOR 10uH | |
| | | < TRANSISTOR > | |
| Q560 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q561 | 8-729-425-50 | TRANSISTOR 2SB1462Q | |
| Q562 | 8-729-402-81 | TRANSISTOR XN4501 | |
| | | < RESISTOR > | |
| R562 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R563 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R564 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R565 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R566 | 1-218-857-11 | METAL CHIP 2.7K 0.50% 1/16W | |
| R567 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R568 | 1-216-168-00 | METAL GLAZE 56 5% 1/8W | |
| R569 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R570 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R571 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R572 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R590 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R591 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| | | < FLEXIBLE BOARD > | |
| W500 | 1-651-889-11 | FP-48 FLEXIBLE BOARD | |
| W501 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-961-A | VC-138 BOARD, COMPLETE (TR72/430)<br>********************** | |
| * | A-7066-018-A | VC-138 BOARD, COMPLETE (TR80)<br>********************** | |
| * | A-7066-080-A | VC-138 BOARD, COMPLETE (TR400/TR750)<br>********************** | |
| * | A-7063-955-A | VC-145 BOARD, COMPLETE (TR82)<br>********************** | |
| * | A-7066-007-A | VC-145 BOARD, COMPLETE (TR70)<br>********************** | |
| * | A-7066-084-A | VC-145 BOARD, COMPLETE (TR42)<br>********************** | |
| * | A-7066-088-A | VC-145 BOARD, COMPLETE (TR550)<br>********************** | |

(Ref. No. 1,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C604 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C605 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C606 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C607 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C608 | 1-104-847-11 | TANTAL. CHIP 22uF 20% 4V | (TR42/TR72/TR82/TR430/TR550) |
| C609 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C610 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C611 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR42/TR72/TR82/TR430/TR550) |
| C613 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR42/TR72/TR82/TR430/TR550) |
| C614 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR42/TR72/TR82/TR430/TR550) |
| C616 | 1-135-091-21 | TANTAL. CHIP 1uF 20% 16V | |
| C617 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C618 | 1-165-176-11 | CERAMIC CHIP 0.047uF 10% 16V | |
| C619 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C620 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C621 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C622 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C623 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C624 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C627 | 1-162-946-11 | CERAMIC CHIP 27PF 5% 50V | |
| C628 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C629 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C630 | 1-162-946-11 | CERAMIC CHIP 27PF 5% 50V | |
| C631 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C632 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C633 | 1-162-946-11 | CERAMIC CHIP 27PF 5% 50V | (TR82/TR400/TR550/TR750) |
| C633 | 1-162-947-11 | CERAMIC CHIP 33PF 5% 50V | (TR42/TR70/TR72/TR80/TR430) |
| C634 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C635 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR82/TR400/TR550/TR750) |
| C636 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR82/TR400/TR550/TR750) |
| C637 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C638 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C639 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C699 | 1-162-954-11 | CERAMIC CHIP 120PF 5% 50V | (TR82/TR400/TR550/TR750) |
| C701 | 1-163-059-91 | CERAMIC CHIP 0.01uF 10% 50V | |
| C702 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C703 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C704 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C705 | 1-135-145-11 | TANTALUM CHIP 0.47uF 10% 35V | |
| C706 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C708 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C709 | 1-135-214-21 | TANTAL. CHIP 4.7uF 20% 20V | |
| C710 | 1-162-971-11 | CERAMIC CHIP 0.001uF 50V | |
| C711 | 1-162-971-11 | CERAMIC CHIP 0.001uF 50V | |
| C712 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C713 | 1-107-685-11 | TANTAL. CHIP 15uF 20% 6.3V | |
| C714 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C715 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C716 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C717 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C718 | 1-162-637-11 | CERAMIC CHIP 0.47uF 16V | |
| C719 | 1-162-971-11 | CERAMIC CHIP 0.001uF 50V | |
| C720 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C721 | 1-162-916-11 | CERAMIC CHIP 12PF 5% 50V | |
| C722 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C724 | 1-162-925-11 | CERAMIC CHIP 68PF 5% 50V | (TR42/TR70/TR72/TR80/TR430) |
| C724 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | (TR82/TR400/TR550/TR750) |
| C725 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C726 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C727 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C728 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C729 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C730 | 1-163-077-00 | CERAMIC CHIP 0.1uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C730 | 1-164-298-11 | CERAMIC CHIP 0.15uF 10% 25V | (TR42/TR70/TR72/TR80/TR430) |
| C731 | 1-135-091-21 | TANTAL. CHIP 1uF 20% 16V | |
| C732 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C733 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C734 | 1-135-091-21 | TANTAL. CHIP 1uF 20% 16V | |
| C735 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C737 | 1-162-946-11 | CERAMIC CHIP 27PF 5% 50V | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C739 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C741 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C742 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C743 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C744 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C745 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C746 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C747 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C748 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C749 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C750 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C751 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C752 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C753 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C754 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C755 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C756 | 1-104-752-11 | TANTAL. CHIP | 33uF | 20% | 6.3V |
| C757 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C771 | 1-164-245-11 | CERAMIC CHIP | 0.015uF | 10% | 25V<br>(TR82/TR400/TR550/TR750) |
| C772 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V<br>(TR82/TR400/TR550/TR750) |
| C773 | 1-164-299-11 | CERAMIC CHIP | 0.22uF | 10% | 25V<br>(TR82/TR400/TR550/TR750) |
| C774 | 1-128-257-21 | ELECT CHIP | 33uF | 20% | 10V<br>(TR82/TR400/TR550/TR750) |
| C775 | 1-128-257-21 | ELECT CHIP | 33uF | 20% | 10V<br>(TR82/TR400/TR550/TR750) |
| C776 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V<br>(TR82/TR400/TR550/TR750) |
| C777 | 1-162-568-11 | CERAMIC CHIP | 0.33uF | 10% | 16V<br>(TR82/TR400/TR550/TR750) |
| C778 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V<br>(TR82/TR400/TR550/TR750) |
| C779 | 1-162-568-11 | CERAMIC CHIP | 0.33uF | 10% | 16V<br>(TR82/TR400/TR550/TR750) |
| C780 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V<br>(TR82/TR400/TR550/TR750) |
| C781 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V<br>(TR82/TR400/TR550/TR750) |
| C782 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V<br>(TR82/TR400/TR550/TR750) |
| C783 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V<br>(TR82/TR400/TR550/TR750) |
| C784 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V<br>(TR82/TR400/TR550/TR750) |
| C785 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V<br>(TR82/TR400/TR550/TR750) |
| C786 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V<br>(TR82/TR400/TR550/TR750) |
| C788 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V<br>(TR82/TR400/TR550/TR750) |
| C789 | 1-164-245-11 | CERAMIC CHIP | 0.015uF | 10% | 25V<br>(TR82/TR400/TR550/TR750) |
| C790 | 1-164-299-11 | CERAMIC CHIP | 0.22uF | 10% | 25V<br>(TR82/TR400/TR550/TR750) |
| C793 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V<br>(TR82/TR400/TR550/TR750) |
| C794 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V<br>(TR82/TR400/TR550/TR750) |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * CN601 | 1-764-395-21 | CONNECTOR, BOARD TO BOARD 42P | |
| CN701 | 1-750-630-11 | CONNECTOR, FFC/FPC (ZIF) 16P | |
| * CN751 | 1-764-528-11 | CONNECTOR, FFC/FPC (ZIF) 21P | |
| CN775 | 1-691-487-21 | CONNECTOR, FFC/FPC 8P | (TR82/TR400/TR550/TR750) |

< TRIMMER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CT701 | 1-141-356-11 | CAP, ADJ | |

< DIODE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D701 | 8-719-404-49 | DIODE MA111 | |
| D702 | 8-719-404-49 | DIODE MA111 | |
| D703 | 8-719-404-49 | DIODE MA111 | |
| D705 | 8-719-404-49 | DIODE MA111 | |

< FILTER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| FL601 | 1-239-352-11 | FILTER, LOW PASS | (TR82/TR400/TR550/TR750) |
| FL601 | 1-239-766-11 | FILTER, LOW PASS | (TR42/TR70/TR72/TR80/TR430) |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC601 | 8-759-044-78 | IC AK6420F-E1 | |
| IC602 | 8-759-260-67 | IC SC424608MC68HC11MA8FU | (TR42/TR70/TR72/TR80/TR82/TR430) |
| IC602 | 8-759-277-18 | IC SC424609MC68HC11MA8FU | (TR400/TR550/TR750) |
| IC603 | 8-759-064-36 | IC MB88346BPFV | |
| IC604 | 8-759-710-29 | IC NJM2235M | (TR42/TR72/TR82/TR430/TR550) |
| IC609 | 8-752-365-71 | IC CXD2150R | (TR42/TR70/TR72/TR80/TR82/TR430) |
| IC609 | 8-752-369-24 | IC CXD2150AR | (TR400/TR550/TR750) |
| IC610 | 8-752-365-72 | IC CXD2151R | |
| IC611 | 8-759-262-36 | IC CXD2133BR | |
| IC613 | 8-759-247-06 | IC CXD2152REL | (TR82/TR400/TR550/TR750) |
| IC614 | 8-759-255-09 | IC uPD6461GS-802-GLG-E2 | |
| IC701 | 8-752-355-07 | IC CXD1267N | |
| IC702 | 8-752-365-73 | IC CXD2405R | (TR82/TR400/TR550/TR750) |
| IC702 | 8-752-365-74 | IC CXD1266R | (TR42/TR70/TR72/TR80/TR430) |
| IC703 | 8-752-069-21 | IC CXA1690Q | |
| IC704 | 8-759-173-24 | IC AD875JST-REEL | (TR70/TR72/TR80/TR430) |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC704 | 8-759-263-29 | IC HD49315FEB | (TR42/TR82/TR400/TR550/TR750) |
| IC705 | 8-752-365-76 | IC CXD2407R | |
| IC751 | 8-759-701-24 | IC NJM3414M | |
| IC752 | 8-759-058-52 | IC XRA10324AF | |
| IC753 | 8-752-365-65 | IC CXD2126N | |
| IC754 | 8-759-247-07 | IC MPC17A34VMEL | |
| IC755 | 8-759-031-58 | IC SC7SU04F | |
| IC772 | 8-759-234-77 | IC TC4S66F | (TR82/TR400/TR550/TR750) |
| IC773 | 8-759-234-77 | IC TC4S66F | (TR82/TR400/TR550/TR750) |
| IC774 | 8-759-058-45 | IC NJM3403AV(TE2) | (TR82/TR400/TR550/TR750) |
| IC775 | 8-759-080-34 | IC TA75W01FU-TE12R | (TR82/TR400/TR550/TR750) |
| IC776 | 8-759-248-78 | IC MB88102PFV-G-BND-ER | (TR82/TR400/TR550/TR750) |
| IC777 | 8-752-850-54 | IC CXP87132-010R | (TR82/TR400/TR550/TR750) |

< COIL >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L601 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L602 | 1-414-078-11 | INDUCTOR 10uH | |
| L603 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L604 | 1-414-078-11 | INDUCTOR 10uH | |
| L605 | 1-410-391-11 | INDUCTOR CHIP 68uH | |
| L606 | 1-414-078-11 | INDUCTOR 10uH | |
| L607 | 1-414-078-11 | INDUCTOR 10uH | (TR82/TR400/TR550/TR750) |
| L608 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L609 | 1-412-979-21 | INDUCTOR 1uH | |
| L610 | 1-412-979-21 | INDUCTOR 1uH | |
| L611 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L612 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L613 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L614 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L702 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L703 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L704 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L705 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L706 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L751 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L752 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L753 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L775 | 1-412-058-11 | INDUCTOR CHIP 10uH | (TR82/TR400/TR550/TR750) |
| L777 | 1-414-078-11 | INDUCTOR 10uH | (TR82/TR400/TR550/TR750) |
| L778 | 1-414-078-11 | INDUCTOR 10uH | (TR82/TR400/TR550/TR750) |

< TRANSISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q604 | 8-729-010-60 | TRANSISTOR MSA1586 | |
| Q605 | 8-729-010-60 | TRANSISTOR MSA1586 | |
| Q606 | 8-729-010-75 | TRANSISTOR MSC4116 | |
| Q607 | 8-729-010-75 | TRANSISTOR MSC4116 | |
| Q701 | 8-729-403-27 | TRANSISTOR XN4401 | |
| Q751 | 8-729-010-75 | TRANSISTOR MSC4116 | |
| Q752 | 8-729-015-76 | TRANSISTOR UN5211 | |

< RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R601 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R602 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R603 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R604 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R605 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R606 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R607 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R608 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R609 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R610 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R611 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R612 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R613 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R614 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R615 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R616 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82) |
| R619 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | |
| R620 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R621 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R622 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R624 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR400/TR430/TR550/TR750) |
| R626 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R627 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R628 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | (TR400/TR550/TR750) |
| R629 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | (TR400/TR550/TR750) |
| R629 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430) |
| R630 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R631 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R634 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R635 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R636 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R637 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R638 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R639 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R640 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R643 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R645 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R646 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R647 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R648 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R649 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R650 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R651 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R652 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R653 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R656 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R657 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R658 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R659 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R661 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R662 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R663 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R664 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R665 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R666 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R667 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R668 | 1-216-824-11 | METAL CHIP 1.8K 5% 1/16W | |
| R669 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R670 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R701 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R702 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R703 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R704 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R705 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R709 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R710 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R711 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R712 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R713 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R714 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R715 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R716 | 1-218-847-11 | METAL CHIP 1K 0.50% 1/16W | |
| R717 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R718 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R719 | 1-218-876-11 | METAL CHIP 16K 0.50% 1/16W | |
| R720 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR42) |
| R720 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R720 | 1-216-844-11 | METAL CHIP 82K 5% 1/16W | (TR70/TR72/TR80/TR430) |
| R721 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R722 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R723 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR72/TR80/TR430) |
| R724 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R725 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R739 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42) |
| R740 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR72/TR80/TR82/TR400/TR430/TR550/TR750) |
| R741 | 1-218-855-11 | METAL CHIP 2.2K 0.50% 1/16W | |
| R742 | 1-218-865-11 | METAL CHIP 5.6K 0.50% 1/16W | |
| R743 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R744 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R745 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R746 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R747 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R748 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R749 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R750 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R751 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R752 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R753 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R754 | 1-216-848-11 | METAL CHIP 180K 5% 1/16W | |
| R755 | 1-216-855-11 | METAL CHIP 680K 5% 1/16W | |
| R756 | 1-216-848-11 | METAL CHIP 180K 5% 1/16W | |
| R757 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R758 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R759 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R760 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R761 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R762 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R764 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R765 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R766 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R767 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R768 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R769 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R770 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R771 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | (TR82/TR400/TR550/TR750) |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R772 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R773 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R774 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R775 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R776 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R777 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R778 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R779 | 1-218-911-11 | METAL CHIP | 470K | 0.50% | 1/16W | (TR82/TR400/TR550/TR750) |
| R780 | 1-218-911-11 | METAL CHIP | 470K | 0.50% | 1/16W | (TR82/TR400/TR550/TR750) |
| R781 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R782 | 1-218-911-11 | METAL CHIP | 470K | 0.50% | 1/16W | (TR82/TR400/TR550/TR750) |
| R783 | 1-218-911-11 | METAL CHIP | 470K | 0.50% | 1/16W | (TR82/TR400/TR550/TR750) |
| R786 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R787 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R788 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R789 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R790 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R791 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R792 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | (TR82/TR400/TR550/TR750) |
| R793 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | (TR82/TR400/TR550/TR750) |

< VIBRATOR >

| Ref.No. | Part No. | Description |
|---|---|---|
| X601 | 1-760-081-21 | VIBRATOR, CERAMIC (24MHz) |
| X701 | 1-760-320-11 | VIBRATOR, CRYSTAL (28.6363MHz) |
| X775 | 1-579-553-11 | VIBRATOR (12MHz)(TR82/TR400/TR550/TR750) |

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* A-7063-957-A VF-65 BOARD, COMPLETE

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(TR42/TR72/TR82/TR400/TR430/TR550/TR750)

(Ref. No. 8,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C901 | 1-124-635-00 | ELECT | 220uF | 20% | 6.3V |
| C902 | 1-163-038-11 | CERAMIC CHIP | 0.1uF | | 25V |
| C903 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C904 | 1-163-011-11 | CERAMIC CHIP | 0.0015uF | 10% | 50V |
| C905 | 1-104-753-11 | TANTAL. CHIP | 47uF | 20% | 6.3V |
| C906 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V |
| C907 | 1-137-306-11 | FILM CHIP | 0.1uF | 5% | 16V |
| C908 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C909 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| ⚠C910 | 1-164-758-11 | CERAMIC CHIP | 0.0039uF | 5% | 50V |
| ⚠C911 | 1-164-715-11 | CERAMIC CHIP | 0.0068uF | 5% | 50V |
| C912 | 1-127-532-11 | ELECT(SOLID) | 47uF | 20% | 6.3V |
| C913 | 1-124-577-11 | ELECT | 82uF | 20% | 10V |
| C914 | 1-128-007-11 | ELECT CHIP | 2.2uF | 20% | 35V |
| C915 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C916 | 1-164-611-11 | CERAMIC CHIP | 0.001uF | 10% | 500V |

< CONNECTOR >

| Ref.No. | Part No. | Description |
|---|---|---|
| CN901 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P |
| CN902 | 1-573-290-11 | PIN, CONNECTOR (1.5MM) (SMD)4P |

< DIODE >

| Ref.No. | Part No. | Description | |
|---|---|---|---|
| D901 | 8-719-404-19 | DIODE | LN1251 (TALLY) |
| D903 | 8-719-400-20 | DIODE | MA152WA |

< IC >

| Ref.No. | Part No. | Description | |
|---|---|---|---|
| IC901 | 8-759-196-14 | IC | BA7149F-E2 |

< COIL >

| Ref.No. | Part No. | Description |
|---|---|---|
| L901 | 1-412-031-11 | INDUCTOR CHIP 47uH |
| L902 | 1-410-389-31 | INDUCTOR CHIP 47uH |
| ⚠L903 | 1-402-680-21 | COIL, FERRITE (HLC) |

< TRANSISTOR >

| Ref.No. | Part No. | Description | |
|---|---|---|---|
| ⚠Q901 | 8-729-120-28 | TRANSISTOR | 2SC1623-L5L6 |
| Q902 | 8-729-106-68 | TRANSISTOR | 2SD1615A-GP |
| Q903 | 8-729-216-31 | TRANSISTOR | 2SA1163-G |
| Q904 | 8-729-120-28 | TRANSISTOR | 2SC1623-L5L6 |

< RESISTOR >

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| R901 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R902 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R903 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W |
| ⚠R904 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| ⚠R905 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R906 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R907 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R908 | 1-216-111-00 | METAL CHIP | 390K | 5% | 1/10W |
| R909 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R910 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R911 | 1-216-160-00 | METAL GLAZE 27 5% 1/8W | |
| R912 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R913 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R914 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |
| R915 | 1-216-308-00 | METAL CHIP 4.7 5% 1/10W | |
| R916 | 1-216-683-11 | METAL CHIP 22K 0.5% 1/10W | |
| R917 | 1-216-693-11 | METAL CHIP 56K 0.5% 1/10W | |
| R918 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R919 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R920 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R921 | 1-216-311-00 | METAL CHIP 6.8 5% 1/10W | |
| R922 | 1-216-101-00 | METAL CHIP 150K 5% 1/10W | |
| R923 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R924 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R925 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R926 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R927 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R928 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |

< VARIABLE RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RV903 | 1-238-086-11 | RES, ADJ, CERMET 470 | |
| RV904 | 1-223-566-11 | RES, ADJ, METAL GLAZE 1M | |

< TRANSFORMER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠T901 | 1-453-124-11 | TRANSFORMER ASSY, FLYBACK | |

< THERMISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| TH901 | 1-809-350-21 | THERMISTOR, NTC (2125) | |

< SOCKET >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠W901 | 1-540-019-21 | SOCKET ASSY, CRT | |

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* A-7066-010-A VF-66 BOARD, COMPLETE (TR70/TR80)
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(Ref. No. 4,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C851 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C852 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C853 | 1-104-916-11 | TANTAL. CHIP 6.8uF 20% 20V | |
| C854 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C855 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C856 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C857 | 1-164-676-11 | CERAMIC CHIP 2200PF 5% 16V | |
| C858 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C859 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C860 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C861 | 1-104-917-11 | TANTAL. CHIP 15uF 20% 20V | |
| C862 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C863 | 1-163-020-00 | CERAMIC CHIP 0.0082uF 10% | 50V |
| C864 | 1-163-020-00 | CERAMIC CHIP 0.0082uF 10% | 50V |
| C865 | 1-162-921-11 | CERAMIC CHIP 33PF 5% | 50V |
| C866 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C867 | 1-135-177-21 | TANTALUM CHIP 1uF 20% | 20V |
| C868 | 1-165-128-11 | CERAMIC CHIP 0.22uF | 16V |
| C869 | 1-163-020-00 | CERAMIC CHIP 0.0082uF 10% | 50V |
| C870 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN851 | 1-573-354-11 | CONNECTOR, FFC/FPC 14P | |
| CN852 | 1-573-354-11 | CONNECTOR, FFC/FPC 14P | |
| CN853 | 1-573-811-11 | CONNECTOR, BOARD TO BOARD 12P | |

< DIODE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D851 | 8-719-404-19 | DIODE LN1251C (TALLY) | |
| D852 | 8-719-043-70 | DIODE MA6S121 | |
| D853 | 8-719-802-36 | DIODE 1SS250 | |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC851 | 8-759-097-75 | IC MB3789PFV-G-BND-ER | |
| IC852 | 8-759-508-68 | IC XRA10358F-E2 | |

< COIL >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L851 | 1-412-033-11 | INDUCTOR CHIP 220uH | |
| L852 | 1-412-029-11 | INDUCTOR CHIP 10uH | |
| L853 | 1-412-033-11 | INDUCTOR CHIP 220uH | |

< TRANSISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q851 | 8-729-024-60 | TRANSISTOR MTD6N15T4 | |
| Q852 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q853 | 8-729-923-62 | TRANSISTOR DTA123JK | |

< RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R851 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R852 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R853 | 1-218-899-11 | METAL CHIP 150K 0.50% 1/16W | |
| R854 | 1-218-901-11 | METAL CHIP 180K 0.50% 1/16W | |
| R855 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R856 | 1-218-899-11 | METAL CHIP 150K 0.50% 1/16W | |
| R857 | 1-218-903-11 | METAL CHIP 220K 0.50% 1/16W | |
| R858 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R859 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R860 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R861 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R862 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R863 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R864 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R865 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R867 | 1-216-850-11 | METAL CHIP | 270K | 5% | 1/16W |
| R868 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R869 | 1-216-843-11 | METAL CHIP | 68K | 5% | 1/16W |
| R870 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W |
| R871 | 1-216-850-11 | METAL CHIP | 270K | 5% | 1/16W |
| R872 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R873 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W |
| R874 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W |
| R875 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R876 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R877 | 1-216-794-11 | METAL CHIP | 5.6 | 5% | 1/16W |
| R878 | 1-216-804-11 | METAL CHIP | 39 | 5% | 1/16W |
| R879 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R880 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R881 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R891 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |

< TRANSFORMER >

⚠T851 0-396-458-00

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* A-7066-011-A VF-67 BOARD, COMPLETE (TR70/TR80)

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< CAPACITOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C901 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C902 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C903 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C904 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C905 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C906 | 1-162-969-11 | CERAMIC CHIP | 0.0068uF | 10% | 25V |
| C907 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C908 | 1-162-919-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C909 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C910 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C911 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C913 | 1-164-156-11 | CERAMIC CHIP | 0.1uF | | 25V |
| C914 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C915 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C916 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C917 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C920 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | 10% | 16V |
| C921 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C925 | 1-164-156-11 | CERAMIC CHIP | 0.1uF | | 25V |
| C926 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C927 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C928 | 1-164-344-11 | CERAMIC CHIP | 0.068uF | 10% | 25V |
| C929 | 1-164-344-11 | CERAMIC CHIP | 0.068uF | 10% | 25V |
| C930 | 1-164-344-11 | CERAMIC CHIP | 0.068uF | 10% | 25V |
| C931 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C932 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C933 | 1-164-156-11 | CERAMIC CHIP | 0.1uF | | 25V |
| C934 | 1-135-145-11 | TANTALUM CHIP | 0.47uF | 10% | 35V |
| C935 | 1-135-179-21 | TANTAL. CHIP | 2.2uF | 20% | 16V |
| C936 | 1-162-967-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C937 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C938 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C939 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C940 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C941 | 1-164-357-11 | CERAMIC CHIP | 1000PF | 5% | 50V |
| C942 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C943 | 1-164-156-11 | CERAMIC CHIP | 0.1uF | | 25V |
| C945 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C946 | 1-135-179-21 | TANTAL. CHIP | 2.2uF | 20% | 16V |
| C947 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C948 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C949 | 1-135-178-11 | TANTAL. CHIP | 1.5uF | 20% | 20V |
| C950 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C951 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C953 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C954 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |

< CONNECTOR >

| Ref. No. | Part No. | Description |
|---|---|---|
| CN901 | 1-573-354-11 | CONNECTOR, FFC/FPC 14P |
| * CN902 | 1-573-984-11 | CONNECTOR, BOARD TO BOARD 10P |
| * CN903 | 1-573-356-11 | CONNECTOR, FFC/FPC 16P |

< DIODE >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| D901 | 8-719-025-91 | DIODE | MA365(E) |
| D903 | 8-719-404-49 | DIODE | MA111 |

< IC >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| IC901 | 8-752-067-59 | IC | CXA1785R |
| IC902 | 8-752-362-78 | IC | CXD2403R |
| IC903 | 8-759-251-40 | IC | MB88E346PFV-G-BND-ER |

< COIL >

| Ref. No. | Part No. | Description |
|---|---|---|
| L901 | 1-412-951-11 | INDUCTOR 10uH |
| L902 | 1-412-962-11 | INDUCTOR 82uH |
| L904 | 1-412-951-11 | INDUCTOR 10uH |
| L905 | 1-412-949-21 | INDUCTOR 6.8uH |
| L906 | 1-412-959-11 | INDUCTOR 47uH |

< TRANSISTOR >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| Q901 | 8-729-402-84 | TRANSISTOR | XN4601 |
| Q902 | 8-729-402-42 | TRANSISTOR | UN5213 |

< RESISTOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R902 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W |
| R903 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R904 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R906 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R907 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R908 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R910 | 1-216-814-11 | METAL CHIP | 270 | 5% | 1/16W | |
| R911 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R912 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R913 | 1-220-397-11 | METAL GLAZE | 4.7M | 5% | 1/16W | |
| R914 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R919 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R920 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R921 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R922 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R923 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R924 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R925 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R926 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R930 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R931 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R933 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R934 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R936 | 1-218-873-11 | METAL CHIP | 12K | 0.50% | 1/16W | |
| R937 | 1-218-905-11 | METAL CHIP | 270K | 0.50% | 1/16W | |
| R938 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W | |
| R939 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R946 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R947 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R948 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R949 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R953 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W | |
| R954 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W | |
| R959 | 1-216-844-11 | METAL CHIP | 82K | 5% | 1/16W | |
| R960 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R961 | 1-216-850-11 | METAL CHIP | 270K | 5% | 1/16W | |
| R969 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R970 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R971 | 1-216-844-11 | METAL CHIP | 82K | 5% | 1/16W | |
| R973 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R974 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |

< VIBRATOR >

| Ref. No. | Part No. | Description |
|---|---|---|
| X901 | 1-579-466-11 | VIBRATOR, CRYSTAL (3.58MHz) |

****************************************************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-959-A | VS-104 BOARD, COMPLETE (TR72)<br>********************** | |
| * | A-7066-008-A | VS-104 BOARD, COMPLETE (TR80)<br>********************** | |
| * | A-7066-079-A | VS-104 (H) BOARD, COMPLETE (TR400)<br>************************** | |
| * | A-7066-086-A | VS-104 BOARD, COMPLETE (TR430)<br>********************** | |
| * | A-7066-134-A | VS-104 (H) BOARD, COMPLETE (TR750)<br>************************** | |
| * | A-7063-953-A | VS-112 BOARD, COMPLETE (TR82)<br>********************** | |
| * | A-7066-019-A | VS-112 BOARD, COMPLETE (TR70)<br>********************** | |
| * | A-7066-047-A | VS-112 (LL) BOARD, COMPLETE (TR42)<br>*************************** | |
| * | A-7066-085-A | VS-112 BOARD, COMPLETE (TR550)<br>********************** | |

(Ref. No. 30,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C101 | 1-162-921-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| | | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | | | | |
| C102 | 1-162-911-11 | CERAMIC CHIP | 6PF | 0.5PF | 50V | |
| | | (TR400/TR750) | | | | |
| C102 | 1-162-922-11 | CERAMIC CHIP | 39PF | 5% | 50V | |
| | | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | | | | |
| C103 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C104 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C106 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C107 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C108 | 1-162-926-11 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C109 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C110 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C111 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C112 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C113 | 1-164-217-11 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C114 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C115 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C116 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C117 | 1-104-852-11 | TANTAL. CHIP | 22uF | 20% | 6.3V | |
| C118 | 1-104-852-11 | TANTAL. CHIP | 22uF | 20% | 6.3V | |
| C119 | 1-162-961-11 | CERAMIC CHIP | 330PF | 10% | 50V | |
| C120 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C121 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C122 | 1-162-961-11 | CERAMIC CHIP | 330PF | 10% | 50V | |
| C123 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C124 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C128 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C131 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C134 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C136 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C137 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C143 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V | |
| C144 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C145 | 1-104-852-11 | TANTAL. CHIP | 22uF | 20% | 6.3V | |
| C146 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C147 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C148 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C149 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C150 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C151 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C152 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C153 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C154 | 1-162-945-11 | CERAMIC CHIP | 22PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C155 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR400/TR750) |
| C157 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C158 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C159 | 1-162-922-11 | CERAMIC CHIP | 39PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C160 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C161 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V | |
| C163 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C164 | 1-162-942-11 | CERAMIC CHIP | 12PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C165 | 1-162-956-11 | CERAMIC CHIP | 180PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C166 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C167 | 1-162-926-11 | CERAMIC CHIP | 82PF | 5% | 50V | (TR72/TR80/TR400/TR430/TR750) |
| C167 | 1-164-382-11 | CERAMIC CHIP | 91PF | 5% | 50V | (TR42/TR70/TR82/TR550) |
| C168 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C169 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C170 | 1-162-915-11 | CERAMIC CHIP | 10PF | 0.5PF | 50V | (TR400/TR750) |
| C171 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V | (TR400/TR750) |
| C172 | 1-162-921-11 | CERAMIC CHIP | 33PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C173 | 1-164-155-11 | CERAMIC CHIP | 75PF | 5% | 50V | (TR400/TR750) |
| C175 | 1-162-915-11 | CERAMIC CHIP | 10PF | 0.5PF | 50V | (TR400/TR750) |
| C176 | 1-162-921-11 | CERAMIC CHIP | 33PF | 5% | 50V | (TR400/TR750) |
| C177 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C178 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C179 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C190 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C202 | 1-162-944-11 | CERAMIC CHIP | 18PF | 5% | 50V | (TR400/TR750) |
| C203 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C204 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C205 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR72/TR82/TR430/TR550) |
| C206 | 1-164-489-11 | CERAMIC CHIP | 0.22uF | 10% | 16V | |
| C207 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C208 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V | |
| C209 | 1-126-246-11 | ELECT CHIP | 220uF | 20% | 4V | |
| C210 | 1-162-961-11 | CERAMIC CHIP | 330PF | 10% | 50V | |
| C211 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C212 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C213 | 1-135-176-21 | TANTALUM CHIP | 0.68uF | 10% | 20V | |
| C214 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C215 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C216 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C217 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C218 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C220 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C221 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | (TR400/TR750) |
| C222 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C223 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C225 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C226 | 1-162-926-11 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C227 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C228 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C229 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C230 | 1-135-180-21 | TANTALUM CHIP | 3.3uF | 20% | 6.3V | |
| C231 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C234 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C234 | 1-164-471-11 | CERAMIC CHIP | 680PF | 5% | 50V | (TR400/TR750) |
| C235 | 1-126-207-11 | ELECT CHIP | 33uF | 20% | 4V | |
| C237 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C238 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C239 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C240 | 1-164-392-11 | CERAMIC CHIP | 390PF | 5% | 50V | |

### 1-1-3. Precautions

### 1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

1. Camera/player power switch (Control switch block (Control switch block (CK board)) ··········Camera
2. Standby switch (Control switch block (FK board)) ·· Standby
3. PROGRAM AE button (Control switch block (CK board)) ··········Off
4. FOCUS switch (Control switch block (CK board)) ···Manual
5. BACK LIGHT button (Control switch block (CK board)) ··········Off
6. STEADY SHOT button (CCD-TR82/TR400/TR550/TR750) (Control switch block (CK board))··········Off

### 2. Adjusting Procedure

Adjust in the given order.

### 3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 7-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   Don't touch the zoom switch.

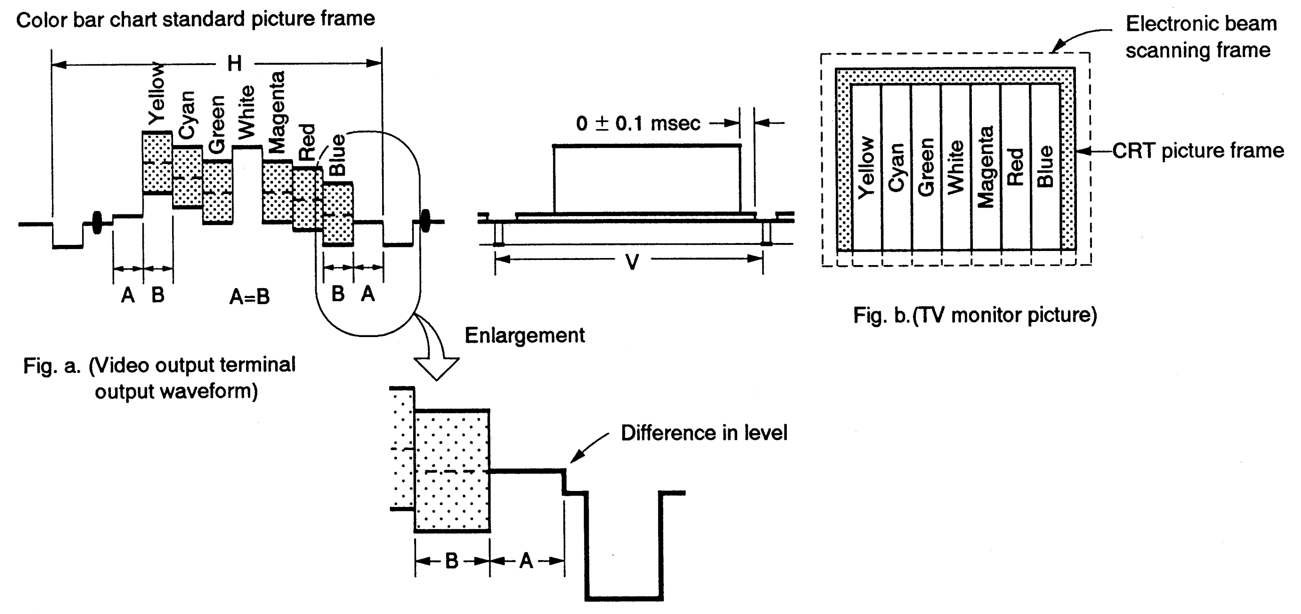

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a. (Video output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 7-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-1-5.

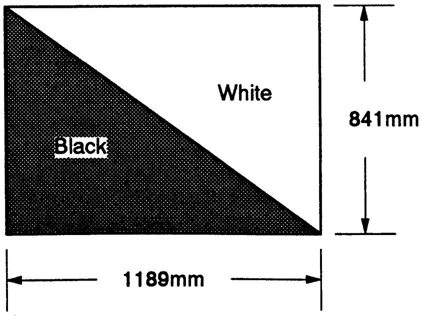

White
Black
841mm
1189mm

Fig. 7-1-5.

**Note:** Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

### 1-1-4. Adjusting Remote Commander

The camera section is adjusted by changing the constant or coefficient of the digital signal processing calculation, or modifying the output voltage of the EVR IC (VC board IC603). This is controlled by the camera micro processor (VC board IC602), which reads the data written in the nonvolatile memory (VC board IC601: EEPROM), and transmits it to the digital signal processing circuit and EVR.

To perform adjustments, adjustment data written in the nonvolatile memory must be rewritten, using the adjusting remote commander.

The adjusting remote commander uses the remote commander signal line (LANC) to communicate mutually with the camera microprocessor. The page, address and the up/down commands of the data are transmitted from the adjusting remote commander to the camera micro processor. And, the page, address, and data are transmitted for the vice versa.

### 1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 7-1-6.

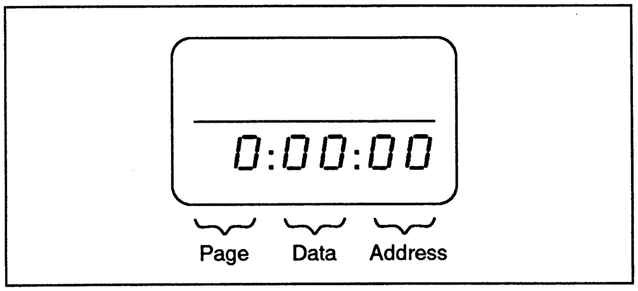


Fig. 7-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

| Hexadecimal notation | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LCD Display | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | c | d | E | F |
| Decimal notation conversion value | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Table 7-1-1.

   - Changing the address
     The address increases when the FF ( ▶▶ ) button is pressed, and decreases when the REW ( ◀◀ ) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY ( ▶ ) button is pressed, and decreases when the STOP ( ■ ) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

### 2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

### 1-1-5. Page F Address List

**Note 1:** The data already listed in the adjustment data memo column are fixed values.

**Note 2:** The adjustment data initial values are values just after executing “Page F Data Initialization” and “Page F Data Modification”. They are different from the values after executing all adjustments.

**Note 3:** In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

**Note 4:** No mark : CCD-TR42/TR72/TR80/TR430
( ) : CCD-TR82/TR550
〈 〉 : CCD-TR70
《 》 : CCD-TR400/TR750

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 00 | 5C (5A) 〈5E〉 《56》 | 5C (5A) 〈5E〉 《56》 |
| 01 | 0A (00) | 0A (00) |
| 02 | 00 | 00 |
| 03 | 00 (07) | 00 (07) |
| 04 | 80 | |
| 05 | 80 | |
| 06 | 80 | |
| 07 | 80 | |
| 08 | 2D | |
| 09 | 26 | |
| 0A | FA | |
| 0B | F1 | |
| 0C | 30 | |
| 0D | 00 | |
| 0E | 58 | |
| 0F | 00 | |
| 10 | E0 | E0 |
| 11 | 8F | |
| 12 | 6C | |
| 13 | 36 | |
| 14 | 3C | |
| 15 | B6 | |
| 16 | 0D | |
| 17 | A3 | |
| 18 | 12 | |
| 19 | 8E | |
| 1A | 10 | |
| 1B | E2 | |
| 1C | 0C | 0C |
| 1D | 00 | 00 |
| 1E | 80 | |
| 1F | 80 | |
| 20 | 80 (79) | 80 (79) |
| 21 | 80 (79) | 80 (79) |
| 22 | 00 | 00 |
| 23 | 59 | 53 |
| 24 | 43 | 43 |
| 25 | A5 (B5) | A5 (B5) |
| 26 | 23 | 23 |
| 27 | 3A | 3A |
| 28 | A2 | A2 |
| 29 | 0B | 0B |

Table 7-1-2 (1).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 2A | 0C (2C) | 0C (2C) |
| 2B | 58 (50) | 58 (50) |
| 2C | FF | FF |
| 2D | 06 ((04)) | 06 ((04)) |
| 2E | 17 (16) | 17 (16) |
| 2F | 22 (27) 《29》 | 22 (27) 《29》 |
| 30 | 08 | 08 |
| 31 | 00 | 00 |
| 32 | 50 (47) 《48》 | 50 (47) 《48》 |
| 33 | 68 | 68 |
| 34 | 00 (02) | 00 (02) |
| 35 | 30 (50) | 30 (50) |
| 36 | 02 | 02 |
| 37 | 00 | 00 |
| 38 | 76 | 76 |
| 39 | 6A | 6A |
| 3A | 80 | 80 |
| 3B | 20 | 20 |
| 3C | F0 | F0 |
| 3D | 03 (02) | 03 (02) |
| 3E | 00 | |
| 3F | 00 | |
| 40 | 00 | |
| 41 | 00 | |
| 42 | 00 | |
| 43 | 00 | |
| 44 | 00 | |
| 45 | 00 | 00 |
| 46 | 00 | |
| 47 | 00 | |
| 48 | 00 | |
| 49 | 00 | |
| 4A | 00 | |
| 4B | 00 | |
| 4C | 00 | |
| 4D | 00 | |
| 4E | 00 | 00 |
| 4F | 20 | 20 |
| 50 | 05 (32) | 05 (32) |
| 51 | 02 | 02 |
| 52 | 66 | 66 |
| 53 | 18 | 18 |

Table 7-1-2 (2).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 54 | 66 (6B) | 66 (6B) |
| 55 | 9F | 9F |
| 56 | 66 | 66 |
| 57 | 66 (6C) | 66 (6C) |
| 58 | 59 (5C) | 59 (5C) |
| 59 | 83 | 83 |
| 5A | 67 | 67 |
| 5B | 5C | 5C |
| 5C | 5C | 5C |
| 5D | 4A | 4A |
| 5E | 1E (20) | 1E (20) |
| 5F | 5C | 5C |
| 60 | 3A (3C) | 3A (3C) |
| 61 | 33 | 33 |
| 62 | 0C | 0C |
| 63 | 26 | 26 |
| 64 | 04 | 04 |
| 65 | 02 | 02 |
| 66 | 00 | 00 |
| 67 | 00 | 00 |
| 68 | 00 | 00 |
| 69 | 00 | 00 |
| 6A | 00 | 00 |
| 6B | 00 | 00 |
| 6C | 00 | 00 |
| 6D | 00 | 00 |
| 6E | 00 | 00 |
| 6F | 34 | 34 |
| 70 | 10 | 10 |
| 71 | 26 | 26 |
| 72 | 0F | 0F |
| 73 | 0F | 0F |
| 74 | 00 | 00 |
| 75 | 23 | 23 |
| 76 | 1B | 1B |
| 77 | E0 | E0 |
| 78 | A0 | A0 |
| 79 | 30 | 30 |
| 7A | 10 | 10 |
| 7B | 50 | 50 |
| 7C | 58 | 58 |
| 7D | 88 | 88 |

Table 7-1-2 (3).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| 7E | 66 | 66 |
| 7F | 46 | 46 |
| 80 | 8F | 8F |
| 81 | 13 | 13 |
| 82 | 30 | 30 |
| 83 | 60 | 60 |
| 84 | 70 | 70 |
| 85 | 80 | 80 |
| 86 | A0 | A0 |
| 87 | C0 | C0 |
| 88 | 70 | 70 |
| 89 | 78 | 78 |
| 8A | 80 | 80 |
| 8B | 90 | 90 |
| 8C | A0 | A0 |
| 8D | 40 | 40 |
| 8E | FF | FF |
| 8F | 00 | 00 |
| 90 | 00 〈11〉 | 00 〈11〉 |
| 91 | 77 | 77 |
| 92 | 00 | 00 |
| 93 | FB | FB |
| 94 | 02 | 02 |
| 95 | 32 | 32 |
| 96 | 6B | 6B |
| 97 | 8D | 8D |
| 98 | A1 | A1 |
| 99 | 30 | 30 |
| 9A | 30 | 30 |
| 9B | 21 | 21 |
| 9C | 72 | 72 |
| 9D | 00 | 00 |
| 9E | 00 | 00 |
| 9F | 00 | 00 |
| A0 | 00 | 00 |
| A1 | 00 | 00 |
| A2 | 00 | 00 |
| A3 | 02 | 02 |
| A4 | 80 | 80 |
| A5 | 00 | 00 |
| A6 | 80 | 80 |
| A7 | 00 | 00 |

Table 7-1-2 (4).

| Address | Adjustment data | |
|---|---|---|
| | Initial value | Memo column |
| A8 | 00 | 00 |
| A9 | 80 | 80 |
| AA | 00 | 00 |
| AB | 00 | 00 |
| AC | 02 | 02 |
| AD | 44 | 44 |
| AE | 3D | 3D |
| AF | 1B (25) | 1B (25) |
| B0 | 3D | 3D |
| B1 | 1B (25) | 1B (25) |
| B2 | A4 (A2) | A4 (A2) |
| B3 | 4B | 4B |
| B4 | 00 | 00 |
| B5 | 20 | 20 |
| B6 | 00 | 00 |
| B7 | 05 | 05 |
| B8 | 00 | 00 |
| B9 | 20 | 20 |
| BA | 00 | 00 |
| BB | 70 (6E) | 70 (6E) |
| BC | 35 (32) | 35 (32) |
| BD | 54 | 54 |
| BE | | |
| BF | | |
| C0 to EF | | |
| F0 | | |
| F1 | | |
| F2 | | |
| F3 | | |
| F4 | | |
| F5 | | |
| F6 | | |
| F7 | | |
| F8 | | |
| F9 | | |
| FA | | |
| FB | | |
| FC | | |
| FD | | |
| FE | | |
| FF | | |

Table 7-1-2 (5).

### 1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

**Hexadecimal notation-Decimal notation**

②

| The lower digits of the hexadecimal notation<br>The upper digits of the hexadecimal notation | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A (A) | B (b) | C (c) | D (d) | E (E) | F (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **1** | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2** | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| **3** | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
| **4** | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| **5** | 80 | 80 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| **6** | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| **7** | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| **8** | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| **9** | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| **A (A)** | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| ① **B (b)** | 176 | 177 | 178 | 179 | 180 | 180 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| **C (c)** | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| **D (d)** | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| **E (E)** | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| **F (F)** | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

**Note:** ( ) indicate the adjusting remote control unit display.

**(Example)** In the case that the DDS display and the adjusting remote control unit display are BD ( b d ).
As the upper digit of the hexadecimal notation is B ( b ), and the lower digit is D ( d ), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-1-3.

# Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action or night views.

## Selecting the Best Mode

Select the best mode by using the following examples.

**Portrait mode**
- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming in on a subject in telephoto

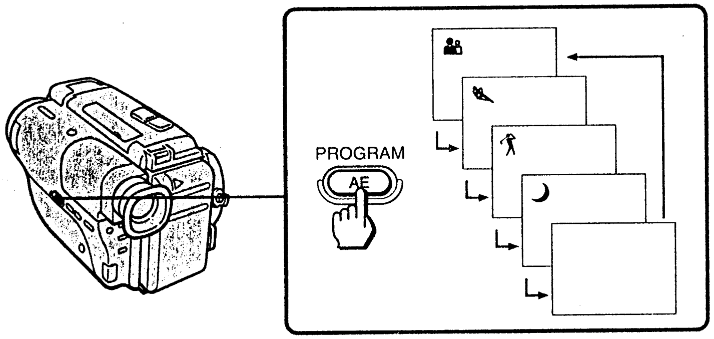
**Sports mode**
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape in a moving car

**High-speed shutter mode**
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in clear, sharp picture

**Twilight mode**
Recording night views neon signs or fireworks

## Using the PROGRAM AE Function

Press PROGRAM AE repeatedly so that the desired mode indicator appears inside the viewfinder.



**Note on shutter speed**
The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode – between 1/60 to 1/2000
Sports mode – between 1/60 to 1/500
High-speed shutter mode – 1/4000
Twilight mode – 1/60
Normal mode – 1/60

# Fade-in and Fade-out

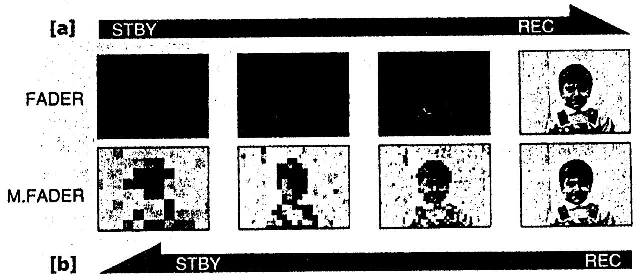
You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

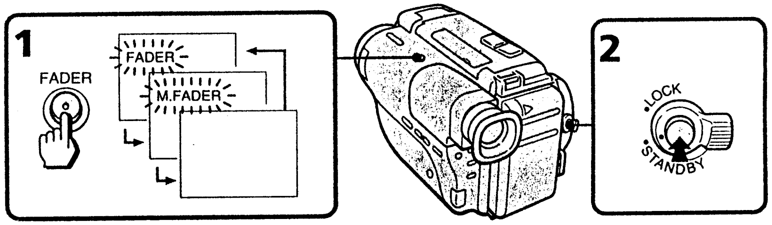
### When Fading in [a]

**(1)** During the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
**(2)** Press START/STOP to start recording. The fade indicator stops flashing.

### When Fading out [b]

**(1)** During recording, press FADER. The fade indicator starts flashing. **(2)** Press START/STOP to stop recording. The fade indicator stops flashing and recording stops.





**To Cancel the Fade-in/out Function**
Before pressing START/STOP, press FADER once or twice until the fade indicator disappears.

**When the date/time indicator is displayed**
The date/time does not fade in nor fade out.

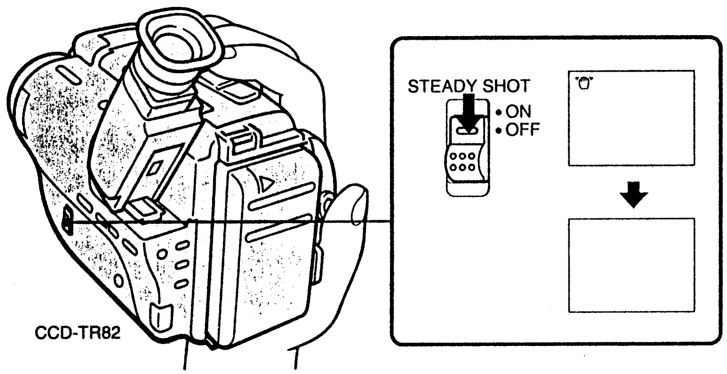
## Releasing the Steady Shot Function

### — For the model with the STEADY SHOT switch (CCD-TR82 only)

When you shoot, the ((ᗢ)) indicator appears in the viewfinder. This indicates that the Steady Shot function is working and the camcorder compensates for camera-shake.

You can release the Steady Shot function. Do not use the Steady Shot function such as when shooting stationary object with a tripod.

Set STEADY SHOT to OFF.



CCD-TR82
STEADY SHOT
• ON
• OFF

### To Activate the Steady Shot Function Again

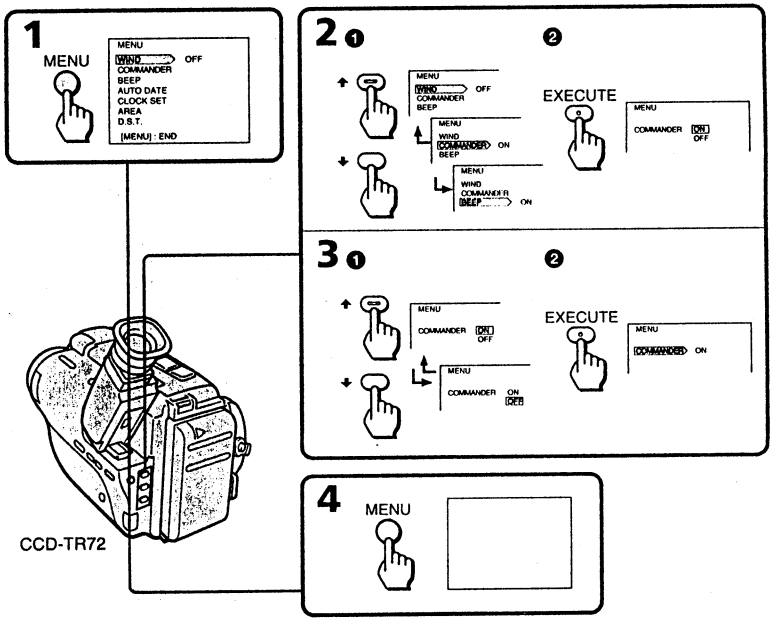
Set STEADY SHOT to ON.

**Notes on the Steady Shot Function**

- The Steady Shot function will not correct excessive camera-shake.
- When you switch the STEADY SHOT, the exposure may vary.

## Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions. **(1)** Press MENU to display the menu in the viewfinder. **(2)** Press ↑ or ↓ to select the desired item, then press EXECUTE. **(3)** Press ↑ or ↓ to set the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 2 and 3. **(4)** Press MENU to erase the menu display.



1
MENU
MENU
WIND OFF
COMMANDER
BEEP
AUTO DATE
CLOCK SET
AREA
D.S.T.
[MENU] : END
2 ❶
❷
MENU
WIND OFF
COMMANDER
BEEP
MENU
WIND
COMMANDER ON
BEEP
MENU
WIND
COMMANDER
BEEP ON
EXECUTE
MENU
COMMANDER ON OFF
3 ❶
❷
MENU
COMMANDER ON OFF
MENU
COMMANDER ON OFF
EXECUTE
MENU
COMMANDER ON
4
MENU
CCD-TR72

### Note on BACK UP

When BACK UP indicator appears on the menu display, the settings of items are retained even when the battery is removed, as long as the lithium battery is in place.

## Selecting the Mode Setting of Each Item

### Common Items in CAMERA and PLAYER Modes

**COMMANDER <ON/OFF>**

- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander for the camcorder.

**BEEP <ON/OFF>**

- Select ON so that beeps sound when you start/stop recording.
- Select OFF when you do not want to hear the beep sound.

See the next page for further information.

### Items in CAMERA mode

**WIND <ON/OFF>**
— For stereo models (CCD-TR72/TR80)
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

**AUTO DATE <ON/OFF>**
- Select ON to record the date of recording automatically (AUTO DATE feature p.12).
- Select OFF otherwise.

**CLOCK SET**
Select this item when you need to reset the clock (p.31).

**AREA**
Select the area number of the time zone where you will use the camcorder when you use the world clock (p.27).

**D.S.T. <ON/OFF>**
- Select ON to set the clock to Daylight Saving Time.
- Select OFF to set to standard time.

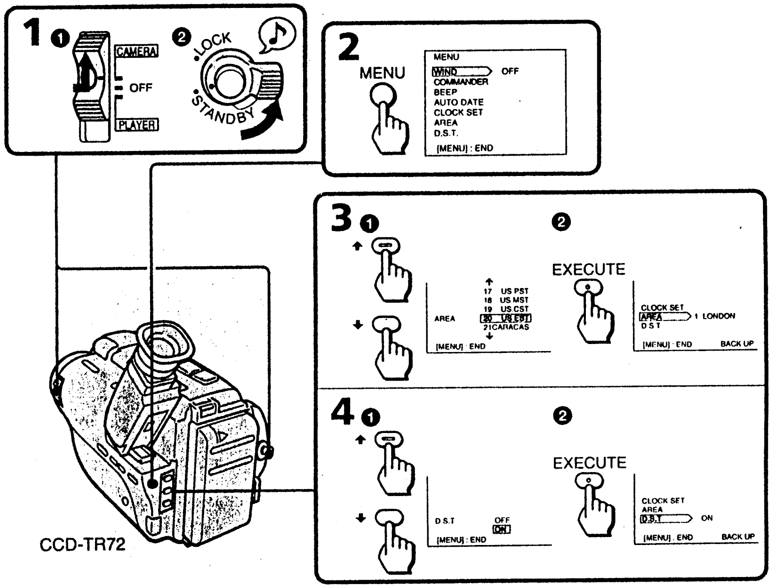
### Items in PLAYER mode

**EDIT <ON/OFF>**
- Select ON to minimize the picture deterioration when editing.
- Normally select OFF.

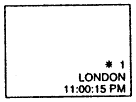
**HiFi SOUND <STEREO/1/2>**
—For stereo models (CCD-TR72/TR80)
- Normally select STEREO.
- Select 1 or 2 to play back a dual soundtrack tape.

## Using the World Clock

Reset the clock according to the local time zone by setting AREA and D.S.T. modes in the menu system. First find the area number in the "Time zone chart" on page 28.
**(1)** Turn STANDBY up. **(2)** Press MENU to display the menu. **(3)** Select AREA item (p.26). Press ↑ or ↓ to select the area number where you will use the camcorder. Press EXECUTE. **(4)** Select D.S.T. item (p.26). Press ↑ or ↓ to select ON: for Daylight Saving Time or OFF: for standard time. Press EXECUTE.


1 ❶
CAMERA
OFF
PLAYER
❷ LOCK
STANDBY
2
MENU
MENU
WIND OFF
COMMANDER
BEEP
AUTO DATE
CLOCK SET
AREA
D.S.T.
[MENU] : END
CCD-TR72
3 ❶
❷
EXECUTE
AREA
17 US PST
18 US MST
19 US CST
20 US EST
21CARACAS
[MENU] : END
CLOCK SET
AREA 1 LONDON
D.S.T
[MENU] : END
BACK UP
4 ❶
❷
EXECUTE
D.S.T
OFF
ON
[MENU] : END
CLOCK SET
AREA
D.S.T ON
[MENU] : END
BACK UP

The area name appears in the viewfinder when using the world clock. The ☼ indicator appears in the viewfinder when setting to Daylight Saving Time.


☼ 1
LONDON
11:00:15 PM

### To Check the Date

Press DATE. To turn off the date indicator, press DATE again.

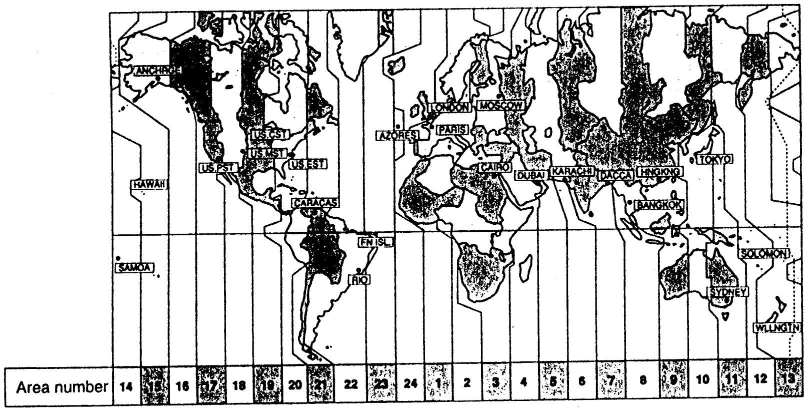
### To restore to Your Home Area Time

Reset the AREA mode in the menu system to your home area number.

See the next page for the Time Zone Chart.

## Changing the Mode Settings

### Time Zone Chart


ANCHRGE
LONDON
MOSCOW
AZORES
PARIS
US CST
US MST
US PST
US EST
HAWAII
CAIRO
DUBAI
KARACHI
DACCA
HNGKNG
TOKYO
CARACAS
BANGKOK
FN ISL
SAMOA
RIO
SOLOMON
SYDNEY
WLLNGTN
Area number
14 15 16 17 18 19 20 21 22 23 24 1 2 3 4 5 6 7 8 9 10 11 12 13

| Area number | Area name | Nations or area* |
|---|---|---|
| 1 | LONDON | England, GMT (Greenwich Mean Time), Morocco, Portugal |
| 2 | PARIS | Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CET |
| 3 | CAIRO | Egypt, Finland, Greece, Israel, Turkey |
| 4 | MOSCOW | Ethiopia, Iraq, Kenya, Saudi Arabia, former U.S.S.R. (west) |
| 5 | DUBAI | United Arab Emirates |
| 6 | KARACHI | Maldives, Pakistan |
| 7 | DACCA | Bangladesh, Myanmar |
| 8 | BANGKOK | Cambodia, Indonesia (Jakarta), Thailand, Vietnam |
| 9 | HNGKNG | Australia (west), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan |
| 10 | TOKYO | Japan, Korea |
| 11 | SYDNEY | Australia (east), Guam, Saipan |
| 12 | SOLOMON | New Caledonia |
| 13 | WLLNGTN | Fiji, New Zealand |
| 14 | SAMOA | Western Samoa |
| 15 | HAWAII | HST (Hawaii Standard Time), Tahiti |
| 16 | ANCHRGE | AST (Alaska Standard Time) |
| 17 | US. PST | PST (Pacific Standard Time) |
| 18 | US. MST | MST (Mountain Standard Time) |
| 19 | US. CST | CST (Central Standard Time), Mexico |
| 20 | US. EST | EST (East Standard Time), Peru |
| 21 | CARACAS | Chili, Dominica, Venezuela |
| 22 | RIO | Argentina, Brazil, Uruguay |
| 23 | FN ISL. | Fernando de Noronha |
| 24 | AZORES | Azores Islands |

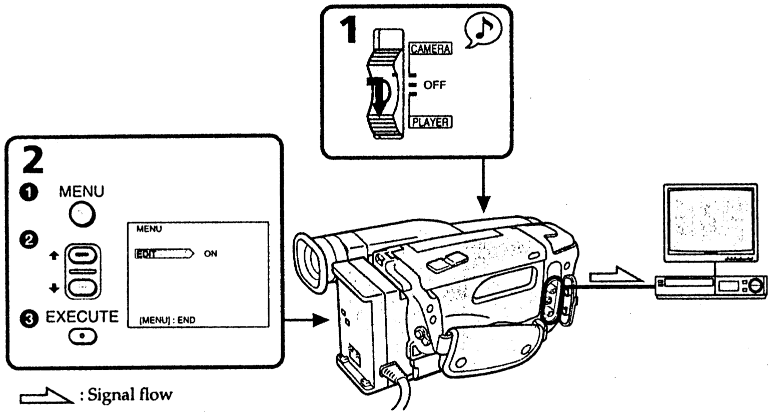
* These are common names. They may be different from formal country names.

## Editing onto Another Tape

You can create your own video program by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, SVHS S-VHS, VHSC VHSC, SVHSC S-VHSC, or B Betamax VCR that has video/audio inputs.

### Before Editing

After connecting the camcorder to the VCR,
**(1)** Slide the POWER switch to PLAYER. **(2)** Set EDIT mode to ON in the menu system to minimise the picture deterioration (p.25).


1
CAMERA
OFF
PLAYER
2
❶ MENU
❷
❸ EXECUTE
MENU
EDIT ON
[MENU] : END
: Signal flow

### Starting Editing

**(1)** Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder. **(2)** Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode. **(3)** Set the recording VCR to recording pause mode. **(4)** Press **II** on the camcorder and VCR simultaneously to start editing.

### To Edit More Scenes

Repeat steps 2 to 4.

### To Stop Editing

Press ☐ STOP on the camcorder and VCR. When you finish editing, reset EDIT mode to OFF (p.25).

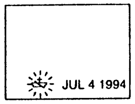
**Use of the EDITSEARCH button**
To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

**Note on DISPLAY function**
If you have displayed the viewfinder screen indicators on the TV (DISPLAY function), erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

**Additional Information**

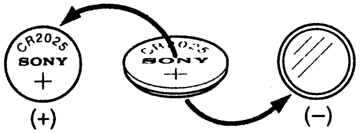
## Changing the Lithium Battery In the Camcorder

Your camcorder is supplied with the lithium battery installed. The lithium battery lasts for about 1 year under normal operation. When the battery becomes weak or dead, indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**



### Note on Lithium Battery

Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**


CR2025
SONY
+
(+)
(–)

**WARNING**

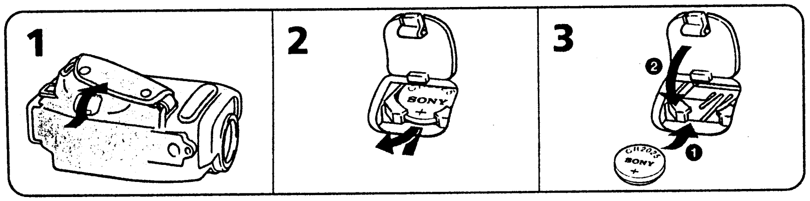
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

**Caution**

**Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.**

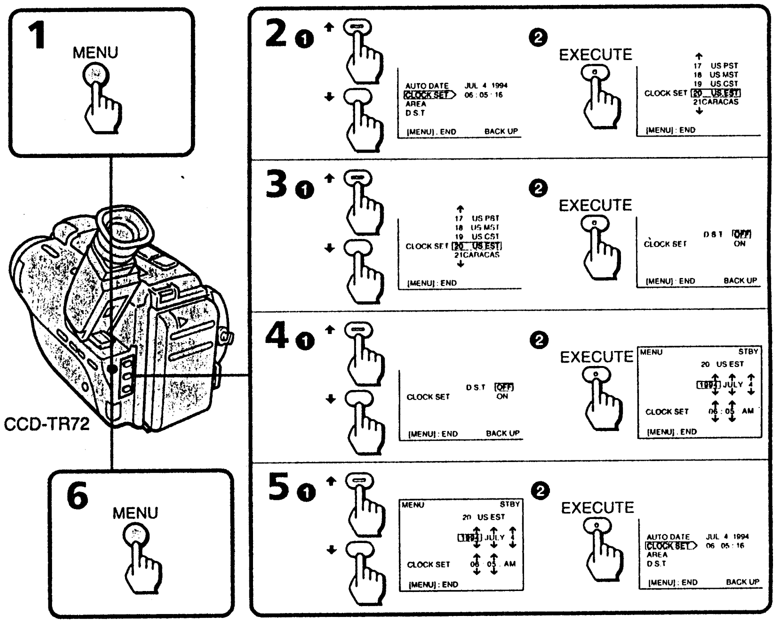
### Changing the Lithium Battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and the other items with BACK UP indicator in the menu system. **(1)** Open the lid of the lithium battery compartment. **(2)** Push the battery down once and pull it out from the holder. **(3)** Install the lithium battery with the positive (+) side facing out. Close the lid of the battery compartment.



## Resetting the Date and Time

Reset the date and time in the menu system.
**(1)** Press MENU to display the menu. **(2)** Press ↑ or ↓ to select CLOCK SET item (p.26). Press EXECUTE. **(3)** Press ↑ or ↓ to select the area number where you will use the camcorder. Press EXECUTE. **(4)** Select D.S.T. ON for Daylight Saving Time or OFF for standard time. Press EXECUTE. **(5)** Set year, month, day, time, minute by pressing ↑, ↓ and EXECUTE. Note that when you keep ↑ and ↓ pressed, the digits advance faster. **(6)** Press MENU to erase the menu display.


1 MENU
CCD-TR72
6 MENU
2 ❶ ↑ ↓
AUTO DATE JUL 4 1994
CLOCK SET 06 : 05 : 16
AREA
D S.T
[MENU] : END BACK UP
❷ EXECUTE
17 US PST
18 US MST
19 US CST
CLOCK SET 20 US EST
21CARACAS
[MENU] : END
3 ❶ ↑ ↓
CLOCK SET
D S T OFF ON
4 ❶ ↑ ↓
MENU STBY
20 US EST
1994 JULY 4
CLOCK SET 06 : 05 AM
5 ❶ ↑ ↓
❷ EXECUTE

**Time Zones and Area Numbers and Names**

"S.T". in the following table stands for Standard Time.

| Time Zones | Area Name | Area Number |
|---|---|---|
| Hawaii S.T. | HAWAI | 15 |
| Alaska S.T. | ANCHRGE | 16 |
| Pacific S.T./West Canada | US.PST | 17 |
| Mountain S.T. | US.MST | 18 |
| Central S.T. | US.CST | 19 |
| Eastern S.T./East Canada | US.EST | 20 |

## Resetting the Date and Time

### To Correct the Date and Time Setting
Repeat steps 2 to 5.

### To Check the Date and Time
Press DATE to display the date indicator in the viewfinder. Press TIME to display the time indicator. When you press the same button again, the indicator goes out.

### To Reset to Standard Time
Change D.S.T. mode setting in the menu system (p.25).

### The year indicator changes as follows:
1994 ↔ 1995 ←----→ 2024

**Note on the time indicator**
The internal clock of the camcorder operates on a 12-hour cycle.
12:00:00 AM stands for midnight. 12:00:00 PM stands for noon.

## Playback Modes

The playback mode is selected automatically according to the recording system (SP/LP mode) in which the tape was recorded.

**Notes on AFM Hi-Fi stereo — For stereo models (CCD-TR72/TR80)**
When you play back the tape, the sound is in monaural if:
- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

**LP (long play) mode**
When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record tape in LP mode.

**Foreign 8 mm video**
You cannot play software recorded on a different TV color system. Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 39 to check the TV color system of foreign countries.

## Tips for Using the Battery Pack

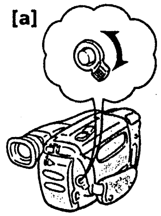
This section shows you how you can get the most out of your battery pack.

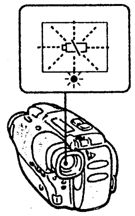
### Preparing the Battery Pack

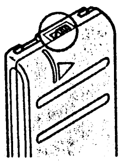
### Always Carry Additional Batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

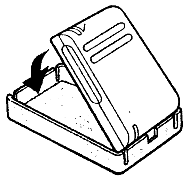
### Battery Life is Shorter in Cold Environment
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

### To Save Battery Power
Turn the STANDBY switch on the camcorder down when not recording to save battery power. **[a]**
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

[a]


[b]


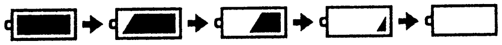
[c]


[d]


# Tips for Using the Battery Pack

## When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the i indicator appears and starts flashing in the viewfinder. **[b]** on page 33.
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

### Note on the remaining battery indicator

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with the remaining battery indicator (not supplied). The indicator of the battery pack is more accurate.

## Notes on the Rechargeable Battery Pack

### The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

### Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

### How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). **[c]** on page 33.

### The Life of the Battery Pack

The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the ▭ indicator flashes rapidly just after turning on the camcordrer with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

### Charging Temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C ). Lower temperatures require a longer charging time.

## Notes on Charging

### A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

### Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the ▭ indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

### After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

## Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

### Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d] on page 33.**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

# Maintenance Information and Precautions

## Moisture Condensation

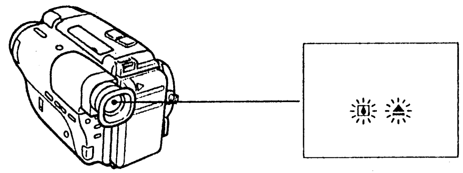
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

### Inside the Camcorder

When ▣ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.

**Eject the cassette turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.**

If the ▣ indicator does not light up when you turn on the power, you can use the camcorder again.



### On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert cassette and press a tape transport button (▶ PLAY, etc.), the ⏏ indicator flashes in the viewfinder. If this happens, none of the functions except cassette ejection will work.

**Eject the cassette and leave it for about 1 hour.**

If the ⏏ indicator does not light up when you insert the cassette and press a tape transport button, you can use the camcorder again.

### On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

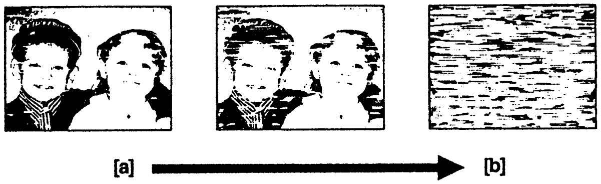
### How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

**(1)** Be sure to tightly seal the plastic bag containing the camcorder.
**(2)** Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

## Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



**[a]** Slight contamination
**[b]** Critical contamination

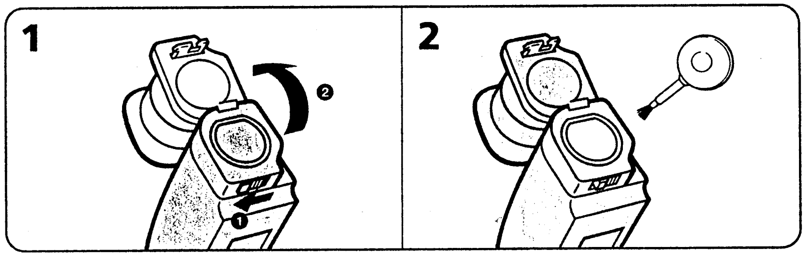
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

**Caution**
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

**Note**
If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

## Removing Dust from inside the Viewfinder

**(1)** While sliding the viewfinder release knob to the left, flip open the viewfinder. **(2)** Clean the surface with a commercially available blower.



## Maintenance Information and Precautions

### Precautions

### Camcorder Operation

- Operate the camcorder using 6.0 V (battery pack), or 7.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by your nearest Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

### On Handling Tapes

Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in.

### Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

### AC Power Adaptor

**Charging**

- Use only for the specified battery pack. This unit cannot be used to charge an NP-500 series battery pack.
- Attach the battery pack firmly.
- Charge the battery pack on a flat surface without vibration.

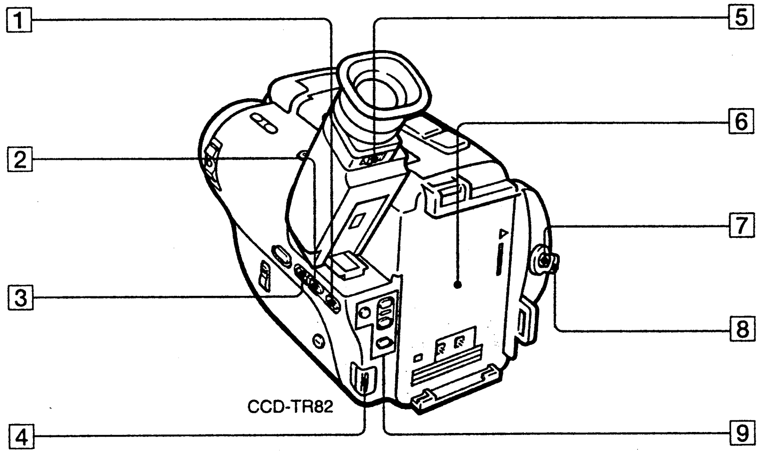
**Others**

- The model for USA or Canada: One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall (mains) outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

## Identifying the Parts

The illustrations in this section are of CCD-TR82.



1 **COUNTER RESET button** (p.12)

2 **TIME button** (p.20)

3 **DATE button** (p.20)

4 **BATT (battery) release knob** (p.8)

5 **Viewfinder release knob** (p.14, 37)

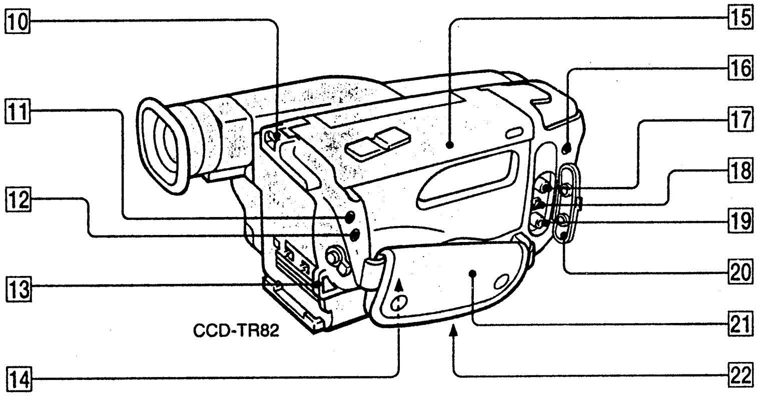
6 **Battery mounting surface** (p.8)

7 **START/STOP button** (p.11)

8 **STANDBY switch** (p.10, 11)

9 **Menu operation buttons** (p.25, 31)

## Identifying the Parts



10 **Hook for shoulder strap** (below)

11 **LANC Ⓛ control jack**
Connect the LANC Ⓛ connecting cable to a wired remote control unit such as an editing controller. In this case, set the COMMANDER mode to OFF in the menu system (p.25).
Ⓛ stands for Local Application Control Bus sytem. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

12 **◎ (earphone) jack (CCD-TR42/TR70/TR82)** (p.15)
**∩ (headphones) jack (CCD-TR72/TR80)** (p.15)

13 **Hook for shoulder strap** (below)

14 **Lithium battery compartment** (p.30)

15 **Cassette compartment lid** (p.9)

16 **MIC (microphone) jack**

17 **VIDEO jack** (p.16)

18 **RFU DC OUT (RFU adaptor DC out) jack** (p.16)

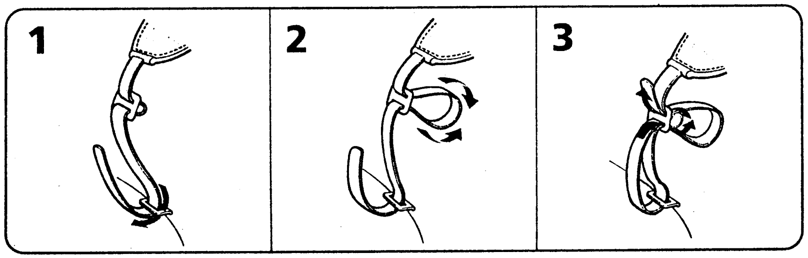
19 **AUDIO jack** (p.16)

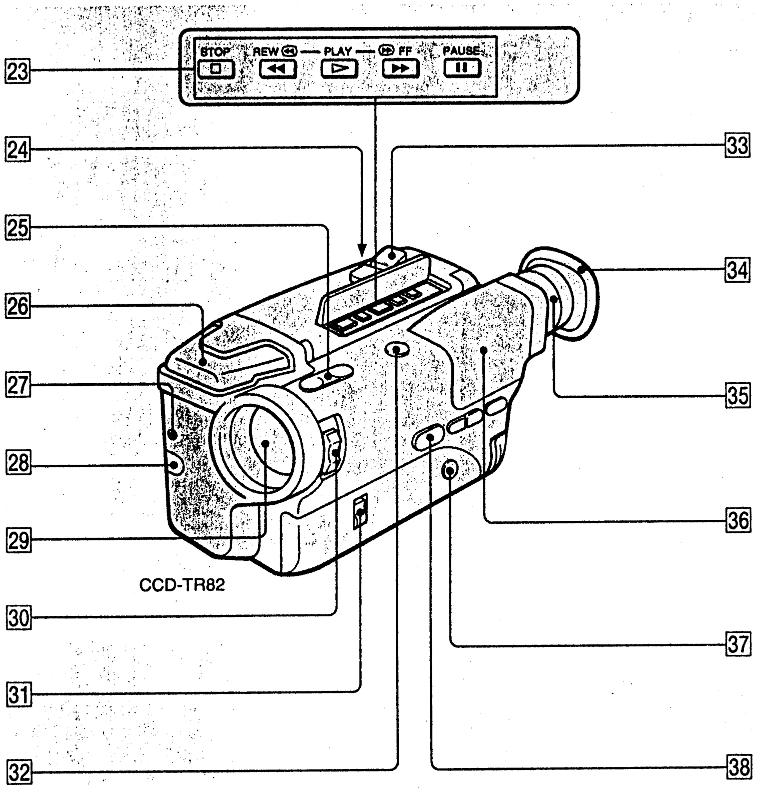
20 **Jack cover**

21 **Grip strap** (p.14)

22 **Tripod receptacle** (p.14)
Attach a tripod (not supplied) here.
When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is shorter than 9/32 inches (6.5 mm). Otherwise, the screw might damage the inner part of the camcorder.

**Attaching the shoulder strap**
Attach the supplied shoulder strap to the hooks for the shoulder strap (10, 13).





23 **Tape transport buttons** (p.17)
■ STOP
◁◁ REW (rewind)
▷ PLAY (playback)
▷▷ FF (fast forward)
❚❚ PAUSE
These buttons will function in PLAYER mode.

24 **EJECT button** (p.9)

25 **EDITSEARCH button** (p.15)

26 **Built-in microphone**

27 **Camera recording/battery lamp**

28 **Remote sensor** (p.49)

29 **Lens cover**

30 **POWER switch** (p.10, 11)

31 **STEADY SHOT switch** (p.24)

32 **FADER button** (p.23)

33 **POWER ZOOM button** (p.13)

34 **Eyecup** (p.14)

35 **Viewfinder adjustment ring** (p.10)

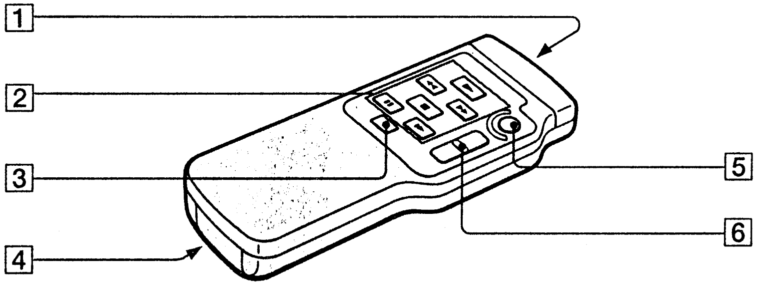
36 **Viewfinder** (p.10, 14)

37 **BACK LIGHT button** (p.21)

38 **PROGRAM AE button** (p.22)

## Remote Commander

The buttons that have the same name on the Remote Commander and on the camcorder function identically.



1 **Transmitter** (p.49)
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 **Tape transport buttons** (p.17)

3 **DISPLAY button** (p.18)

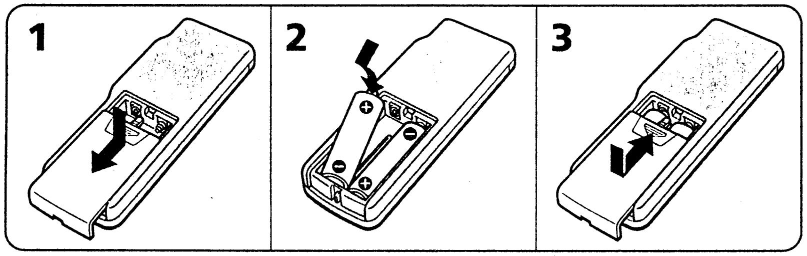
4 **Size AA (R6) battery holder**

5 **START/STOP button**

6 **Power zoom button**
The zooming speed is unchangeable on the Remote Commander.

### Preparing the Remote Commander

To use the Remote Commander, you must insert two size AA (R6) batteries. Use the supplied size AA (R6) batteries.
**(1)** Remove the battery cover from the Remote Commander. **(2)** Insert both of the size AA (R6) batteries with correct polarity. **(3)** Put the battery cover back onto the Remote Commander.

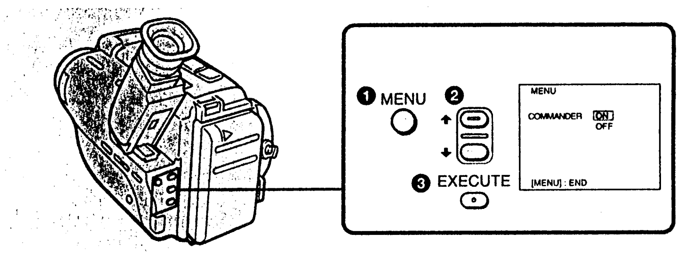


**Note on battery life**
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or daed, the Remote Commander does not work.

**To avoid damage from possible battery leakage**
Remove the batteries when you will not use the Remote Commander for a long time.

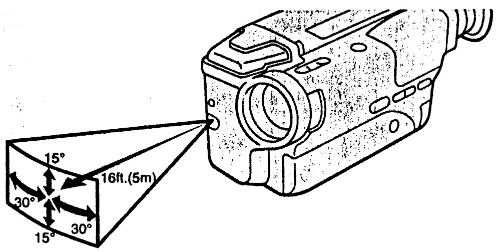
### Using the Remote Commander

Make sure that the COMMANDER mode is set to ON in the menu system (p.25).



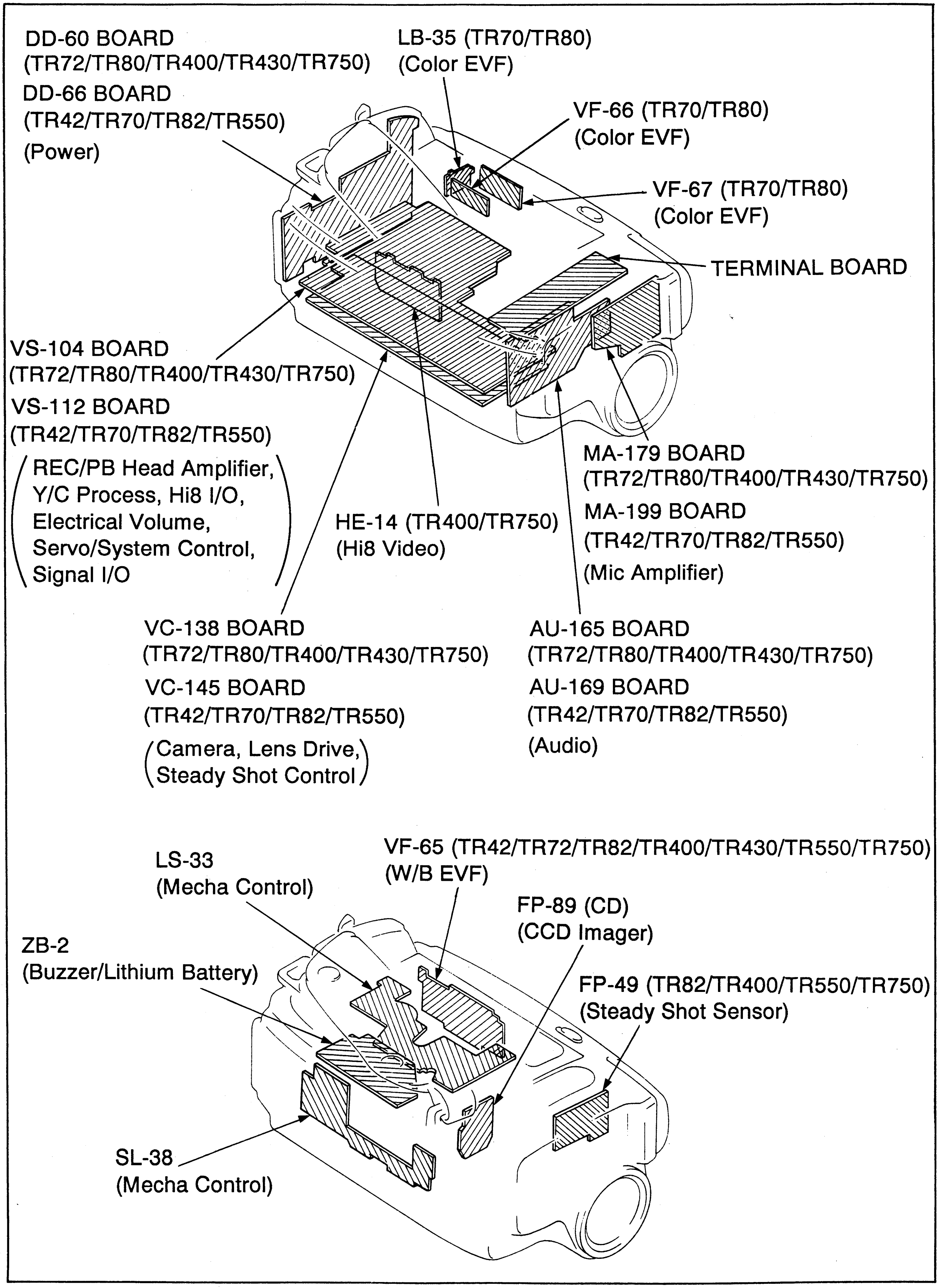
### Remote Control Direction

Aim the Remote Commander to the remote sensor within the range as shown below.



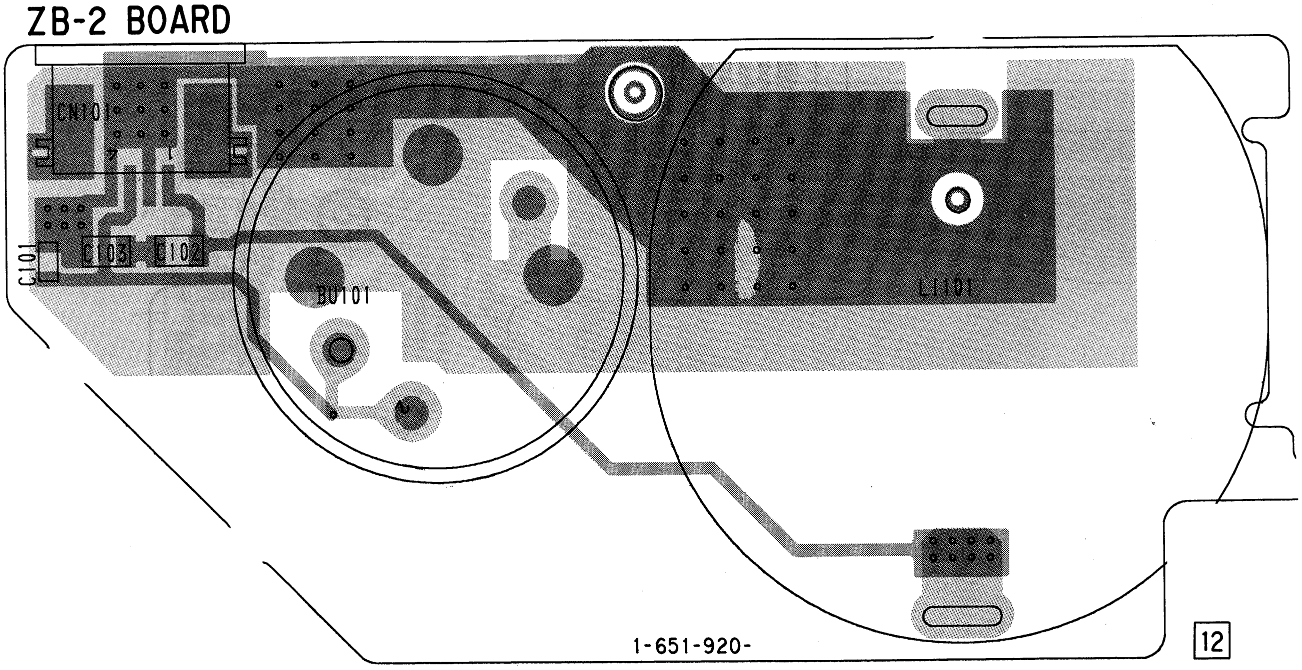
**Notes on the Remote Commander**
- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2, and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

## 2-14. CIRCUIT BOARDS LOCATION

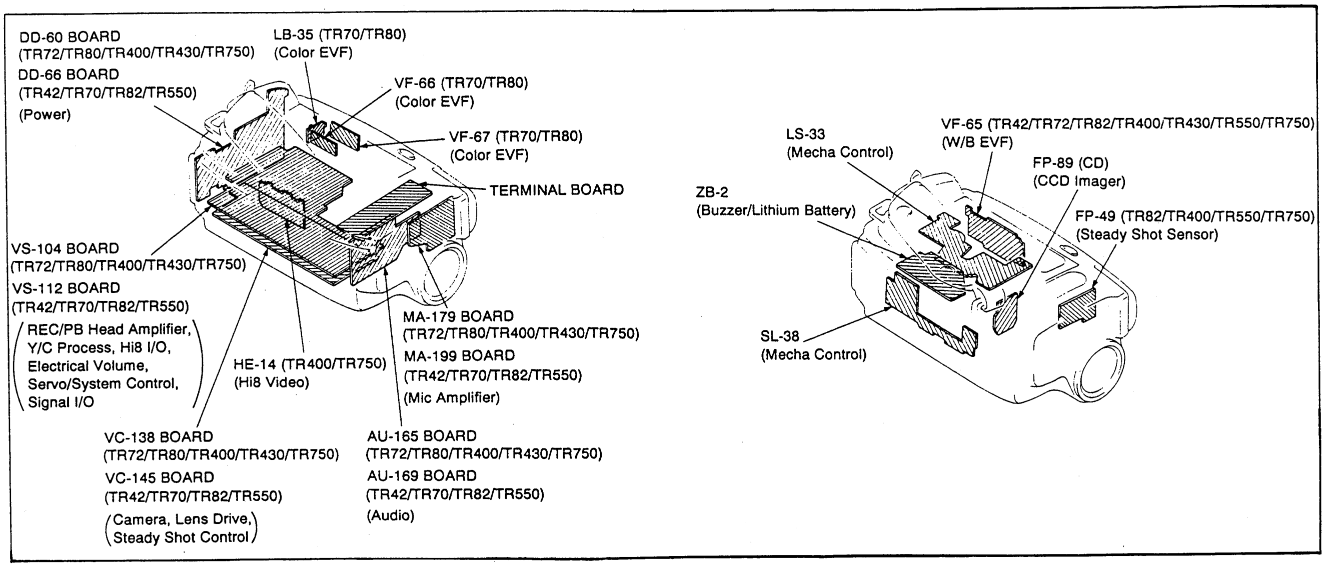

DD-60 BOARD
(TR72/TR80/TR400/TR430/TR750)
DD-66 BOARD
(TR42/TR70/TR82/TR550)
(Power)
LB-35 (TR70/TR80)
(Color EVF)
VF-66 (TR70/TR80)
(Color EVF)
VF-67 (TR70/TR80)
(Color EVF)
TERMINAL BOARD
VS-104 BOARD
(TR72/TR80/TR400/TR430/TR750)
VS-112 BOARD
(TR42/TR70/TR82/TR550)
(REC/PB Head Amplifier, Y/C Process, Hi8 I/O, Electrical Volume, Servo/System Control, Signal I/O)
HE-14 (TR400/TR750)
(Hi8 Video)
MA-179 BOARD
(TR72/TR80/TR400/TR430/TR750)
MA-199 BOARD
(TR42/TR70/TR82/TR550)
(Mic Amplifier)
VC-138 BOARD
(TR72/TR80/TR400/TR430/TR750)
VC-145 BOARD
(TR42/TR70/TR82/TR550)
(Camera, Lens Drive, Steady Shot Control)
AU-165 BOARD
(TR72/TR80/TR400/TR430/TR750)
AU-169 BOARD
(TR42/TR70/TR82/TR550)
(Audio)
LS-33
(Mecha Control)
VF-65 (TR42/TR72/TR82/TR400/TR430/TR550/TR750)
(W/B EVF)
FP-89 (CD)
(CCD Imager)
ZB-2
(Buzzer/Lithium Battery)
FP-49 (TR82/TR400/TR550/TR750)
(Steady Shot Sensor)
SL-38
(Mecha Control)

## ZB-2 (BUZZER/LITHIUM BATTERY) PRINTED WIRING BOARD

— Ref. No. ZB-2 BOARD: 4000 series —

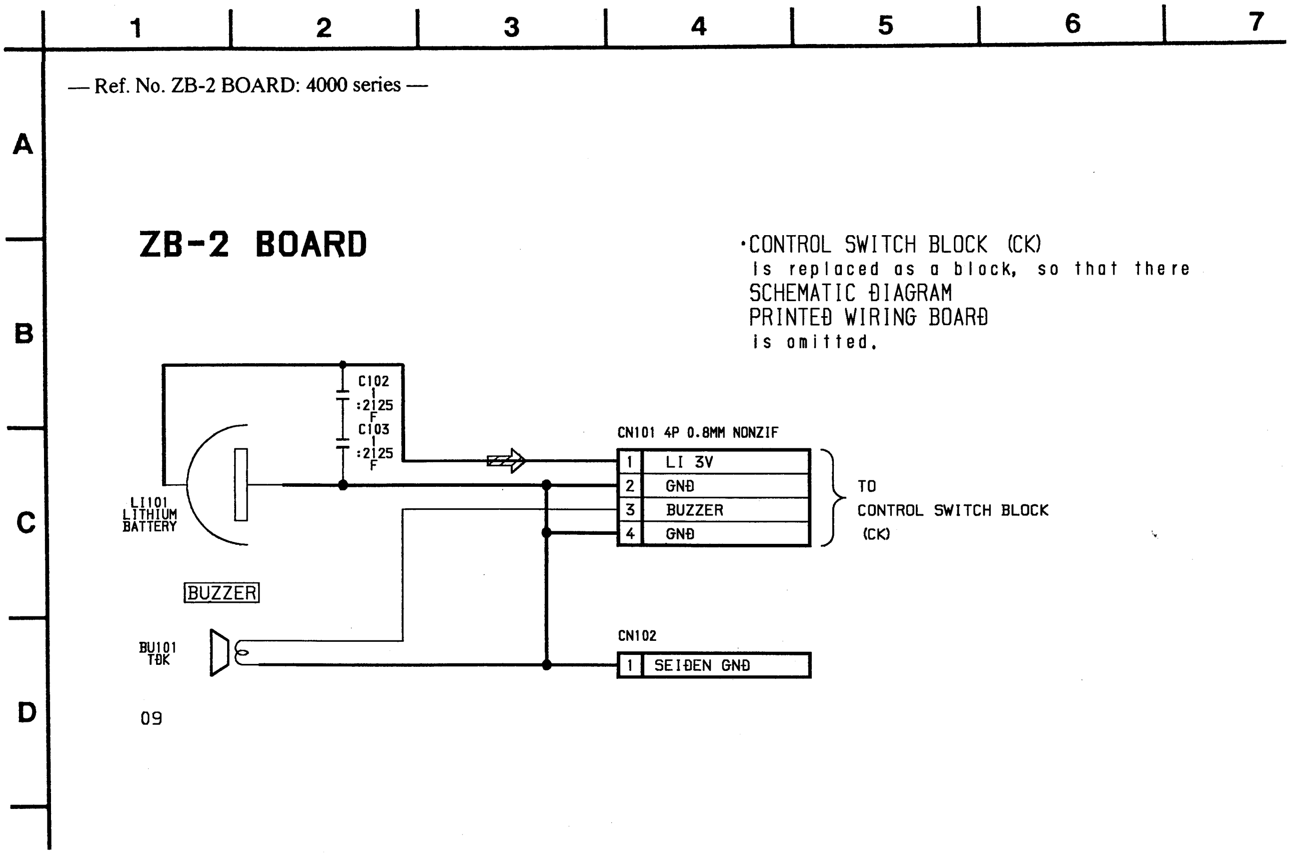

ZB-2 BOARD
CN101
C101
C103
C102
BU101
L1101
1-651-920-
12

- **For printed wiring board of ZB-2 board.**
- ▨ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.


DD-60 BOARD
(TR72/TR80/TR400/TR430/TR750)
DD-66 BOARD
(TR42/TR70/TR82/TR550)
(Power)
LB-35 (TR70/TR80)
(Color EVF)
VF-66 (TR70/TR80)
(Color EVF)
VF-67 (TR70/TR80)
(Color EVF)
TERMINAL BOARD
VS-104 BOARD
(TR72/TR80/TR400/TR430/TR750)
VS-112 BOARD
(TR42/TR70/TR82/TR550)
(REC/PB Head Amplifier, Y/C Process, Hi8 I/O, Electrical Volume, Servo/System Control, Signal I/O)
HE-14 (TR400/TR750)
(Hi8 Video)
MA-179 BOARD
(TR72/TR80/TR400/TR430/TR750)
MA-199 BOARD
(TR42/TR70/TR82/TR550)
(Mic Amplifier)
VC-138 BOARD
(TR72/TR80/TR400/TR430/TR750)
VC-145 BOARD
(TR42/TR70/TR82/TR550)
(Camera, Lens Drive, Steady Shot Control)
AU-165 BOARD
(TR72/TR80/TR400/TR430/TR750)
AU-169 BOARD
(TR42/TR70/TR82/TR550)
(Audio)
LS-33
(Mecha Control)
VF-65 (TR42/TR72/TR82/TR400/TR430/TR550/TR750)
(W/B EVF)
FP-89 (CD)
(CCD Imager)
ZB-2
(Buzzer/Lithium Battery)
FP-49 (TR82/TR400/TR550/TR750)
(Steady Shot Sensor)
SL-38
(Mecha Control)

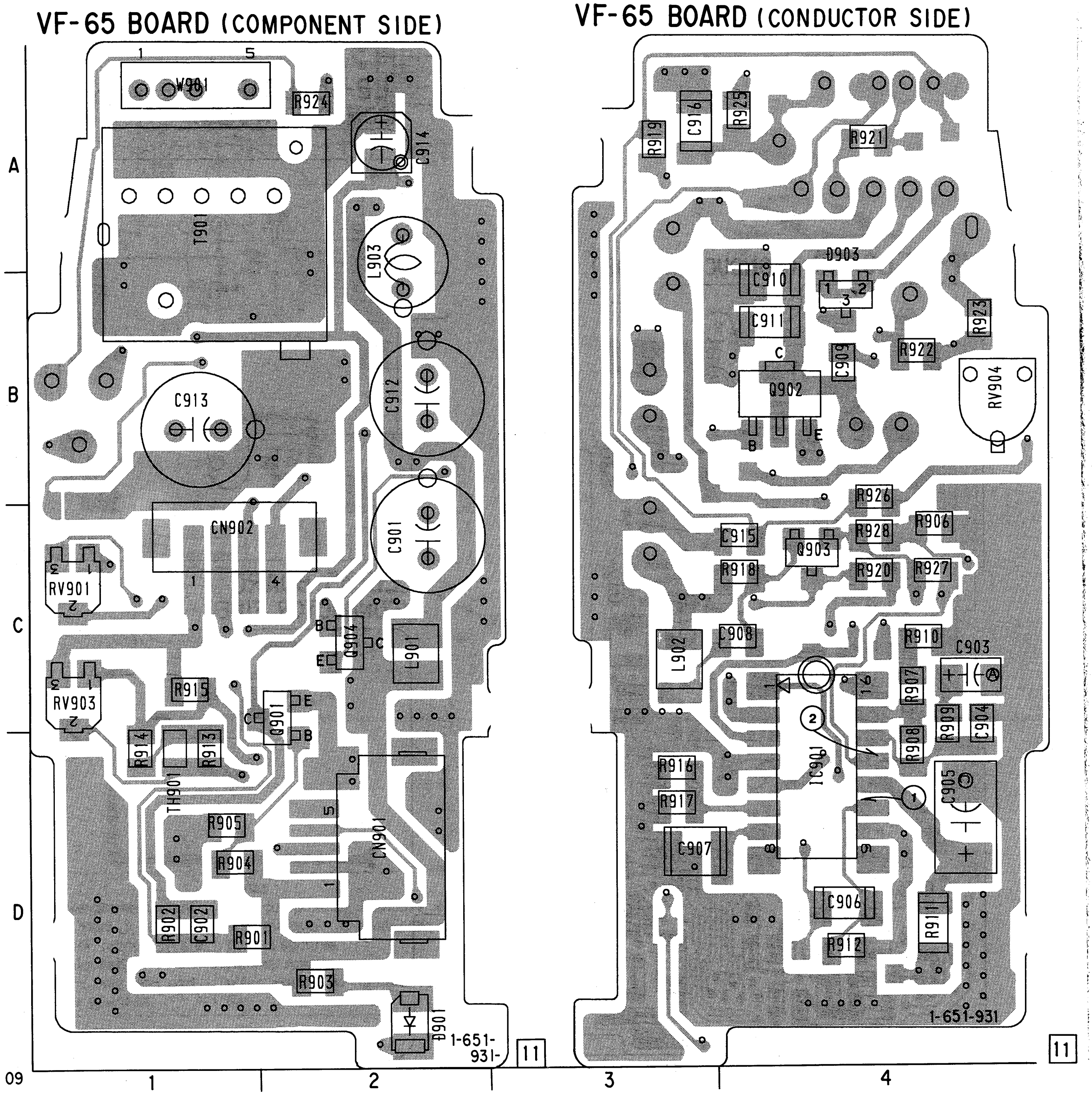
## ZB-2 (BUZZER/LITHIUM BATTERY) SCHEMATIC DIAGRAM

— Ref. No. ZB-2 BOARD: 4000 series —


1
2
3
4
5
6
7
A
B
C
D
ZB-2 BOARD
·CONTROL SWITCH BLOCK (CK)
is replaced as a block, so that there
SCHEMATIC DIAGRAM
PRINTED WIRING BOARD
is omitted.
C102
:2125
F
C103
:2125
F
LI101
LITHIUM
BATTERY
CN101 4P 0.8MM NONZIF
1 LI 3V
2 GND
3 BUZZER
4 GND
TO
CONTROL SWITCH BLOCK
(CK)
BUZZER
BU101
TDK
CN102
1 SEIDEN GND
09

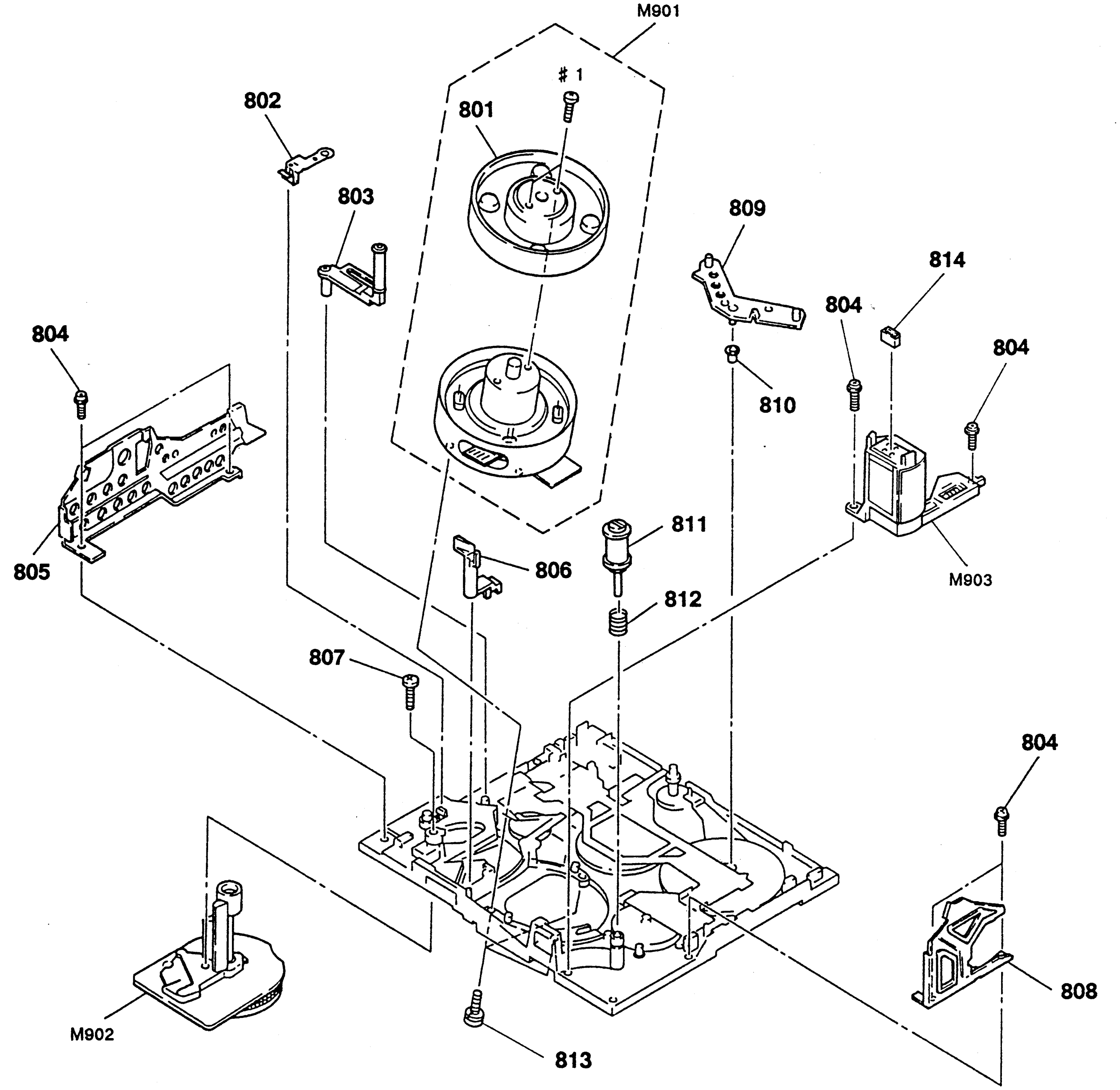
## **VF-65 (W/B EVF) PRINTED WIRING BOARD (TR42/TR72/TR82/TR400/TR430/TR550/TR750)**

— Ref. No. VF-65 BOARD: 8000 series —


VF-65 BOARD (COMPONENT SIDE)
VF-65 BOARD (CONDUCTOR SIDE)
A
B
C
D
09
1
2
3
4
W901
1
5
R924
C914
T901
L903
C913
C912
CN902
1
4
C901
RV901
RV903
R915
Q904
B
C
E
L901
Q901
R914
R913
TH901
R905
R904
CN901
5
1
R902
C902
R901
R903
D901
1-651-931
11
C916
R925
R919
R921
D903
C910
C911
C909
R922
R923
Q902
RV904
R926
R906
C915
Q903
R928
R918
R920
R927
C908
R910
C903
L902
IC901
R907
R909
C904
R908
R916
R917
C905
C907
C906
R911
R912
1-651-931
11

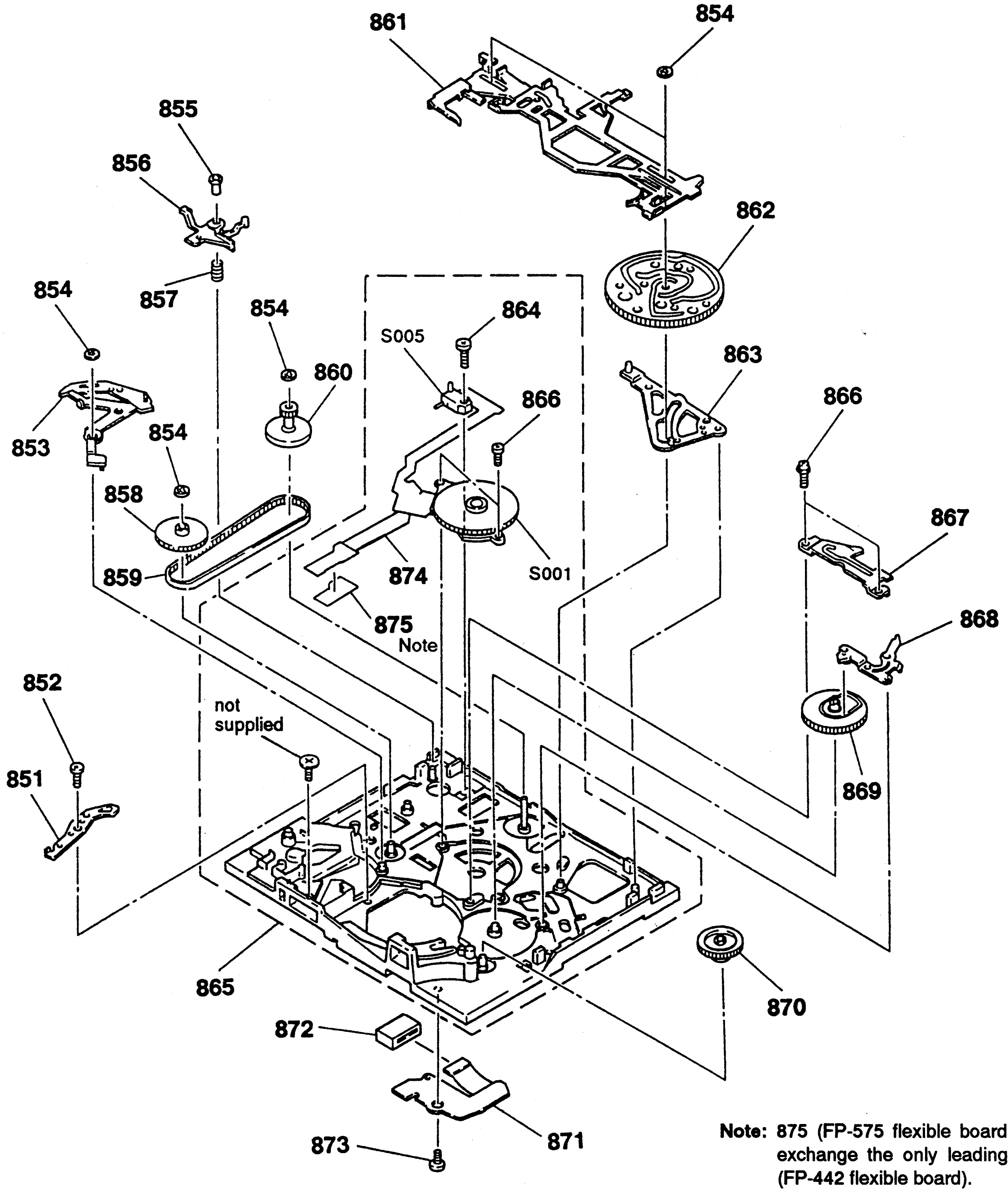
- **For printed wiring boards.**
- VF-65 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

## 5-1-10. MECHANISM CHASSIS ASSEMBLY (1)



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 801 | A-7049-501-A | DRUM ASSY, UPPER (DGR-78-R) (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| 801 | A-7049-567-A | DRUM ASSY, UPPER (DGR-92-R)(TR400/TR750) | |
| 802 | 3-945-822-01 | SPRING, LEAF, TG7 ARM | |
| 803 | A-7040-305-A | ARM BLOCK ASSY, TG7 | |
| 804 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 805 | X-3941-255-1 | PLATE (T) ASSY, SIDE | |
| 806 | 3-945-735-01 | ARM, HC CONVERSION | |
| 807 | 3-713-786-71 | SCREW (M2X5) | |
| 808 | 3-945-691-01 | PLATE (S), SIDE | |
| 809 | 3-945-701-01 | ARM, LS | |
| 810 | 3-945-702-01 | ROLLER, LS | |
| 811 | X-3941-262-1 | ROLLER ASSY, TG2 | |
| 812 | 3-956-651-01 | SPRING, COMPRESSION | |
| 813 | 3-686-493-01 | SCREW (M2X5), P1 | |
| 814 | 1-568-323-11 | CONNECTOR, BOARD TO BOARD 4P | |
| M901 | A-7048-564-A | DRUM ASSY (DGH-78A-R) (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| M901 | A-7048-633-A | DRUM ASSY (DGH-92A-R)(TR400/TR750) | |
| M902 | 8-835-477-12 | MOTOR, DC SCE-0101A (CAPSTAN) | |
| M903 | A-7040-304-A | MOTOR BLOCK ASSY, LM (LOADING) | |

## 5-1-11. MECHANISM CHASSIS ASSEMBLY (2)



861
854
855
856
862
854
857
854
864
S005
860
863
866
866
853
854
858
867
859
874
S001
875
Note
868
852
not supplied
851
869
865
870
872
871
873

**Note:** 875 (FP-575 flexible board) is part that exchange the only leading part of 874 (FP-442 flexible board).

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 851 | 3-945-734-01 | ARM, HC DRIVING | |
| 852 | 3-728-103-11 | SCREW (M1.4X1.6), SPECIAL HEAD | |
| 853 | X-3941-259-1 | ARM ASSY, PINCH PRESS | |
| 854 | 3-726-829-01 | WASHER, STOPPER | |
| 855 | 3-945-730-01 | SLEEVE, EJECT | |
| 856 | 3-945-706-01 | LEVER, EJECT | |
| 857 | 3-945-729-01 | SPRING, COMPRESSION | |
| 858 | X-3941-256-1 | GEAR ASSY, CHANGE | |
| 859 | 3-944-539-01 | BELT, RELAY | |
| 860 | 3-945-695-01 | PULLEY, RELAY | |
| 861 | X-3941-260-1 | SLIDER ASSY, M | |
| 862 | 3-945-696-02 | CAM | |
| 863 | X-3941-258-1 | ARM ASSY, GL | |
| 864 | 3-713-786-71 | SCREW (M2X5) | |
| 865 | A-7040-303-A | CHASSIS ASSY, MECHANICAL | |
| 866 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 867 | 3-945-722-01 | RETAINER, GEAR | |
| 868 | X-3941-257-1 | ARM ASSY, FF | |
| 869 | 3-945-697-01 | GEAR (B), L | |
| 870 | 3-945-700-01 | GEAR (A), L | |
| 871 | 1-641-643-12 | FP-444 FLEXIBLE BOARD | |
| 872 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | |
| 873 | 3-945-756-01 | SCREW (M1.4X3) | |
| 874 | 1-641-639-13 | FP-442 FLEXIBLE BORD | |
| 875 | 1-645-271-11 | FP-575 FLEXIBLE BORD | |
| S001 | 1-572-986-11 | SWITCH, ROTARY (ENCODER) | |
| S005 | 1-570-771-21 | SWITCH (C DOWN) | |

## 5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Canadian model is abbreviated as CND.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-7063-958-A | AU-165 BOARD, COMPLETE<br>**********************<br>(TR72/TR80/TR400/TR430/TR750)<br>(Ref. No. 10,000 Series) | | | |
| | | < CAPACITOR > | | | |
| C1302 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1303 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1304 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1305 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1306 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1307 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1308 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1309 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1310 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1311 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1312 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C1313 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C1314 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C1315 | 1-126-209-11 | ELECT | 100uF | 20% | 4V |
| C1316 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1318 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1319 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C1321 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1323 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1326 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1327 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1328 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C1329 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C1330 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1331 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1332 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1333 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C1334 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1335 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1336 | 1-135-148-21 | TANTAL. CHIP | 1.5uF | 20% | 10V |
| C1337 | 1-135-148-21 | TANTAL. CHIP | 1.5uF | 20% | 10V |
| C1338 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1339 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1340 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1341 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C1343 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1344 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C1345 | 1-162-967-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C1346 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1347 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1348 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1349 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1350 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1352 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1353 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1355 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C1356 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1357 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C1358 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1359 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1360 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1361 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1362 | 1-162-969-11 | CERAMIC CHIP | 0.0068uF | 10% | 25V |
| C1363 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C1364 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| | | < CONNECTOR > | | | |
| CN1301 | 1-691-490-21 | CONNECTOR, FFC/FPC 11P | | | |
| * CN1302 | 1-691-933-11 | CONNECTOR, BOARD TO BOARD 34P | | | |
| | | < DIODE > | | | |
| D1302 | 8-719-404-46 | DIODE MA110 | | | |
| D1303 | 8-719-045-87 | DIODE MA4Z082WA-TX | | | |
| D1304 | 8-719-045-87 | DIODE MA4Z082WA-TX | | | |
| | | < FILTER > | | | |
| FL402 | 1-236-838-21 | FILTER, BAND PASS (1.7MHz) | | | |
| FL1302 | 1-236-837-21 | FILTER, BAND PASS (1.5MHz) | | | |
| | | < IC > | | | |
| IC402 | 8-759-234-77 | IC TC4S66F | | | |
| IC1301 | 8-759-159-94 | IC LA7491W-TBM | | | |
| | | < TRANSISTOR > | | | |
| Q1301 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |
| Q1302 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |
| Q1303 | 8-729-403-35 | TRANSISTOR UN5113 | | | |
| Q1305 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |
| Q1306 | 8-729-230-63 | TRANSISTOR 2SC4116-YG | | | |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| Q1311 | 8-729-230-63 | TRANSISTOR | 2SC4116-YG | | | |
| Q1312 | 8-729-402-42 | TRANSISTOR | UN5213 | | | |
| Q1313 | 8-729-403-35 | TRANSISTOR | UN5113 | | | |
| Q1315 | 8-729-402-42 | TRANSISTOR | UN5213 | | | |
| Q1316 | 8-729-230-63 | TRANSISTOR | 2SC4116-YG | | | |
| Q1317 | 8-729-230-63 | TRANSISTOR | 2SC4116-YG | | | |
| Q1318 | 8-729-402-81 | TRANSISTOR | XN4501 | | | |
| Q1319 | 8-729-402-81 | TRANSISTOR | XN4501 | | | |
| Q1320 | 8-729-230-63 | TRANSISTOR | 2SC4116-YG | | | |
| Q1321 | 8-729-420-12 | TRANSISTOR | XN4213 | | | |
| Q1322 | 8-729-420-12 | TRANSISTOR | XN4213 | | | |

< RESISTOR >

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R1301 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R1302 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1303 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R1304 | 1-216-810-11 | METAL CHIP | 120 | 5% | 1/16W | |
| R1305 | 1-216-810-11 | METAL CHIP | 120 | 5% | 1/16W | |
| R1306 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1307 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1308 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1309 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1312 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R1316 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R1317 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1318 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1321 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R1322 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R1323 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R1324 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1325 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1330 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1331 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1334 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R1335 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R1336 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1337 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R1338 | 1-216-863-11 | METAL GLAZE | 3.3M | 5% | 1/16W | |
| R1340 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1341 | 1-216-863-11 | METAL GLAZE | 3.3M | 5% | 1/16W | |
| R1342 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R1346 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1347 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1348 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W | |
| R1349 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R1350 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R1351 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1352 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1353 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1354 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1355 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1356 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1357 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R1358 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R1359 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R1360 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R1361 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R1362 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R1363 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R1364 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R1365 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R1366 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R1367 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R1368 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R1369 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R1370 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R1371 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R1372 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R1373 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1375 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R1376 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R1381 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |

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* A-7063-952-A AU-169 BOARD, COMPLETE

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(TR42/TR70/TR82/TR550)

(Ref. No. 5,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C402 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | 10% | 16V | |
| C403 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C404 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C405 | 1-164-677-11 | CERAMIC CHIP | 0.033uF | 10% | 16V | |
| C407 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C408 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C409 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C411 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V | |
| C412 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V | |
| C413 | 1-126-209-11 | ELECT | 100uF | 20% | 4V | |
| C414 | 1-128-006-11 | ELECT CHIP | 4.7uF | 20% | 25V | |
| C415 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C416 | 1-162-951-11 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C418 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C419 | 1-162-967-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V | |
| C421 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C422 | 1-164-674-11 | CERAMIC CHIP | 1800PF | 5% | 16V | |
| C423 | 1-164-471-11 | CERAMIC CHIP | 680PF | 5% | 50V | |
| C424 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C425 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C426 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V |
| C428 | 1-128-006-11 | ELECT CHIP | 4.7uF | 20% | 25V |
| C429 | 1-128-013-11 | ELECT CHIP | 1uF | 20% | 50V |
| C430 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |
| C431 | 1-162-969-11 | CERAMIC CHIP | 0.0068uF | 10% | 25V |
| C432 | 1-164-674-11 | CERAMIC CHIP | 1800PF | 5% | 16V |
| C433 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C434 | 1-128-003-11 | ELECT CHIP | 22uF | 20% | 4V |
| C435 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C436 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C437 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C438 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C439 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |
| C440 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C441 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C442 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |

< CONNECTOR >

| Ref. No. | Part No. | Description |
|---|---|---|
| CN401 | 1-691-516-11 | CONNECTOR, BOARD TO BOARD 24P |
| CN402 | 1-691-487-21 | CONNECTOR, FFC/FPC 8P |

< DIODE >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| D402 | 8-719-045-87 | DIODE | MA4Z082WA-TX |

< IC >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| IC401 | 8-759-823-19 | IC | CXA1488RR |

< COIL >

| Ref. No. | Part No. | Description |
|---|---|---|
| L401 | 1-412-954-11 | INDUCTOR 18uH |

< TRANSISTOR >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| Q402 | 8-729-230-63 | TRANSISTOR | 2SC4116 |
| Q403 | 8-729-230-63 | TRANSISTOR | 2SC4116 |
| Q404 | 8-729-402-81 | TRANSISTOR | XN4501 |
| Q405 | 8-729-402-42 | TRANSISTOR | UN5213 |
| Q406 | 8-729-403-35 | TRANSISTOR | UN5113 |

< RESISTOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R401 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R402 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R403 | 1-216-859-11 | METAL GLAZE | 1.5M | 5% | 1/16W |
| R404 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W |
| R407 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R409 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R410 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W |
| R411 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R412 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R413 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R415 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R416 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R417 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R418 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W |
| R419 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R420 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W |
| R421 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R423 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R424 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R425 | 1-216-810-11 | METAL CHIP | 120 | 5% | 1/16W |
| R427 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R428 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R429 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R430 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R431 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R432 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R433 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R434 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R435 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W |
| R436 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |

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* A-7063-960-A DD-60 BOARD, COMPLETE
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(TR72/TR400/TR430/TR750)

* A-7066-009-A DD-60 BOARD, COMPLETE (TR80)
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* A-7063-954-A DD-66 BOARD, COMPLETE (TR42/TR82/TR550)
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* A-7066-006-A DD-66 BOARD, COMPLETE (TR70)
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(Ref. No. 9,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C901 | 1-163-989-11 | CERAMIC CHIP | 0.033uF | 10% | 25V |
| C902 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C903 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V |
| C904 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V |
| C906 | 1-164-245-11 | CERAMIC CHIP | 0.015uF | 10% | 25V |
| C907 | 1-162-963-11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C908 | 1-162-963-11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C909 | 1-162-963-11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C910 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C911 | 1-162-963-11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C912 | 1-128-530-11 | ELECT CHIP | 33uF | 20% | 10V |
| C913 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |
| C914 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |
| C915 | 1-165-178-11 | CERAMIC CHIP | 6.8uF | | 16V |
| C916 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |
| C917 | 1-165-178-11 | CERAMIC CHIP | 6.8uF | | 16V |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C918 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C920 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C921 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C923 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C924 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C925 | 1-164-337-11 | CERAMIC CHIP 2.2uF | 16V |
| C926 | 1-164-337-11 | CERAMIC CHIP 2.2uF | 16V |
| C927 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C928 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C929 | 1-135-216-11 | TANTALUM CHIP 10uF 20% | 10V |
| C930 | 1-107-418-11 | ELECT CHIP 10uF 20% | 35V |
| C931 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C932 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C934 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C935 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C936 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C937 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C938 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C939 | 1-163-023-00 | CERAMIC CHIP 0.015uF 5% | 50V |
| C940 | 1-163-023-00 | CERAMIC CHIP 0.015uF 5% | 50V |
| C941 | 1-163-019-00 | CERAMIC CHIP 0.0068uF 10% | 50V |
| C942 | 1-163-009-11 | CERAMIC CHIP 0.001uF 10% | 50V |
| C943 | 1-163-019-00 | CERAMIC CHIP 0.0068uF 10% | 50V |
| C944 | 1-164-161-11 | CERAMIC CHIP 0.0022uF 10% | 100V |
| C945 | 1-128-530-11 | ELECT CHIP 33uF 20% | 10V |
| C950 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| | | < CONNECTOR > | |
| CN901 | 1-695-324-11 | CONNECTOR, BOARD TO BOARD 42P | |
| | | < DIODE > | |
| D900 | 8-719-045-87 | DIODE MA4Z082WA | |
| D901 | 8-719-027-77 | DIODE MA796 | |
| D902 | 8-719-045-87 | DIODE MA4Z082WA (TR72/TR80/TR400/TR430/TR750) | |
| D909 | 8-719-404-49 | DIODE MA111 | |
| D910 | 8-719-404-49 | DIODE MA111 | |
| | | < FUSE > | |
| ⚠F450 | 1-576-213-11 | FUSE, CHIP (1.6A 125V) | |
| ⚠F451 | 1-576-213-11 | FUSE, CHIP (1.6A 125V) | |
| ⚠F452 | 1-576-213-11 | FUSE, CHIP (1.6A 125V) | |
| | | < IC > | |
| IC901 | 8-759-249-14 | IC MB3799-02PFV-GBND-ER | |
| | | < JACK > | |
| J901 | 1-537-281-41 | TERMINAL BOARD (BATTERY) | |
| J902 | 1-565-276-21 | JACK, ULTRA SMALL 1P (REMOTE) | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| J903 | 1-568-027-11 | JACK, SMALL TYPE 1P (EARPHONE) (TR42/TR70/TR82/TR550) | |
| J903 | 1-569-809-11 | JACK (SMALL TYPE) (HEADPHONES) (TR72/TR80/TR400/TR430/TR750) | |
| | | < COIL > | |
| L901 | 1-424-653-11 | COIL, CHOKE 10uH | |
| L902 | 1-424-653-11 | COIL, CHOKE 10uH | |
| L903 | 1-424-653-11 | COIL, CHOKE 10uH | |
| L904 | 1-409-556-11 | COIL, CHOKE 47uH | |
| L905 | 1-424-674-11 | COIL, CHOKE 22uH | |
| L906 | 1-409-556-11 | COIL, CHOKE 47uH | |
| L907 | 1-424-674-11 | COIL, CHOKE 22uH | |
| L908 | 1-424-674-11 | COIL, CHOKE 22uH | |
| L909 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L910 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L911 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L912 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L913 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L914 | 1-412-064-11 | INDUCTOR CHIP 100uH | |
| L915 | 1-412-064-11 | INDUCTOR CHIP 100uH | |
| L916 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L917 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| | | < TRANSISTOR > | |
| Q900 | 8-729-421-90 | TRANSISTOR XN4113 (TR70/TR80) | |
| Q901 | 8-729-420-12 | TRANSISTOR XN4213 | |
| Q902 | 8-729-804-41 | TRANSISTOR 2SB1122 | |
| Q903 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q904 | 8-729-823-84 | TRANSISTOR FP102 | |
| Q905 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q906 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q907 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q908 | 8-729-420-12 | TRANSISTOR XN4213 (TR70/TR80) | |
| Q909 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q910 | 8-729-429-32 | TRANSISTOR UN9210-QRS (TR70/TR80) | |
| Q911 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q912 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q914 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q915 | 8-729-402-42 | TRANSISTOR UN5213 | |
| | | < RESISTOR > | |
| R901 | 1-218-872-11 | METAL CHIP 11K 0.50% 1/16W | |
| R902 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R903 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R904 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R905 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R906 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R907 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| R908 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R909 | 1-216-031-00 | METAL CHIP 180 5% 1/10W | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R910 | 1-216-029-00 | METAL CHIP 150 5% 1/10W | |
| R911 | 1-216-029-00 | METAL CHIP 150 5% 1/10W | |
| R912 | 1-216-029-00 | METAL CHIP 150 5% 1/10W | |
| R913 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R915 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R918 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R919 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R920 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R921 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| R922 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R923 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| R924 | 1-412-979-21 | INDUCTOR 1uH | |
| R925 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R926 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R931 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R932 | 1-412-979-21 | INDUCTOR 1uH | |
| R933 | 1-412-979-21 | INDUCTOR 1uH | (TR72/TR80/TR400/TR430/TR750) |
| R934 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R936 | 1-412-979-21 | INDUCTOR 1uH | |
| R937 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R938 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R939 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R940 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R941 | 1-218-849-11 | METAL CHIP 1.2K 0.50% 1/16W | |
| R942 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R943 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R944 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R945 | 1-218-847-11 | METAL CHIP 1K 0.50% 1/16W | |
| R946 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR70/TR80) |
| R947 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | (TR70/TR80) |
| R948 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR70/TR80) |
| R949 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR70/TR80) |
| | | < TRANSFORMER > | |
| T901 | 1-426-730-11 | TRANSFORMER, CONVERTER | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | 1-651-890-11 | FP-49 FLEXIBLE BOARD<br>******************** | (TR82/TR400/TR550/TR750)<br>(Ref. No. 3,000 Series) |
| | | < SENSOR > | |
| SE691 | 1-810-024-31 | SENSOR, ANGULAR VELOCITY | |
| SE692 | 1-810-024-41 | SENSOR, ANGULAR VELOCITY | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7072-004-A | FP-89 (CD) BOARD, COMPLETE<br>************************** | (TR82/TR400/TR550/TR750) |
| * | A-7072-005-A | FP-89 (CD) BOARD, COMPLETE<br>************************** | (TR42/TR70/TR72/TR80/TR430)<br>(Ref. No. 3,000 Series) |
| | | < CAPACITOR > | |
| C691 | 1-135-214-21 | TANTAL. CHIP 4.7uF 20% 20V | |
| C692 | 1-135-210-11 | TANTALUM CHIP 4.7uF 20% 10V | |
| C694 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |
| C695 | 1-164-156-11 | CERAMIC CHIP 0.1uF 25V | |
| C696 | 1-104-908-11 | TANTAL. CHIP 47uF 20% 4V | |
| | | < IC > | |
| IC691 | A-7030-368-A | CCD BLOCK ASSY (AUTO)(054 SERVICE) (CCD IMAGER) | (TR42/TR70/TR72/TR80/TR430) |
| IC691 | A-7030-373-A | CCD BLOCK ASSY (AUTO)(059V SERVICE) (CCD IMAGER) | (TR82/TR400/TR550/TR750) |
| | | < COIL > | |
| L691 | 1-412-963-11 | INDUCTOR 100uH | |
| | | < TRANSISTOR > | |
| Q691 | 8-729-232-86 | TRANSISTOR 2SK1875-BL/V | |
| Q692 | 8-729-117-73 | TRANSISTOR 2SC4178-F14 | |
| | | < RESISTOR > | |
| R691 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R692 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R693 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R693 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R694 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R694 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R695 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | (TR82/TR400/TR550/TR750) |

**Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.**

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R695 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R696 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R697 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |

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* A-7066-078-A HE-14 BOARD, COMPLETE (TR400/TR750)

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(Ref. No. 20,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C1101 | 1-162-917-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C1102 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C1103 | 1-162-917-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C1104 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C1106 | 1-162-919-11 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C1107 | 1-162-975-11 | CERAMIC CHIP | 24PF | 5% | 50V | |
| C1108 | 1-162-923-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C1109 | 1-162-928-11 | CERAMIC CHIP | 120PF | 5% | 50V | |
| C1110 | 1-162-910-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V | |
| C1111 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1112 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1113 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C1114 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1115 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1116 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1117 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1118 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1119 | 1-162-919-11 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C1121 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1122 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V | |
| C1123 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C1124 | 1-162-925-11 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C1125 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1126 | 1-162-925-11 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C1127 | 1-162-910-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V | |
| C1128 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1129 | 1-162-925-11 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C1130 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1131 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1132 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1133 | 1-162-919-11 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C1134 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1135 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1136 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1137 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1138 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1140 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1141 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1142 | 1-164-392-11 | CERAMIC CHIP | 390PF | 5% | 50V | |
| C1143 | 1-162-912-11 | CERAMIC CHIP | 7PF | 0.5PF | 50V | |
| C1144 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C1146 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1150 | 1-162-913-11 | CERAMIC CHIP | 8PF | 0.5PF | 50V | |
| C1151 | 1-162-917-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C1152 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C1155 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1156 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C1157 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1158 | 1-162-922-11 | CERAMIC CHIP | 39PF | 5% | 50V | |
| C1160 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C1161 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V | |
| C1162 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C1163 | 1-162-941-11 | CERAMIC CHIP | 10PF | 0.5PF | 50V | |
| C1164 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1165 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C1166 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C1167 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1168 | 1-162-959-11 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C1169 | 1-164-155-11 | CERAMIC CHIP | 75PF | 5% | 50V | |
| C1171 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C1173 | 1-162-952-11 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C1175 | 1-162-955-11 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C1176 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C1178 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C1179 | 1-162-943-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C1181 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V | |
| C1182 | 1-162-955-11 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C1183 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1184 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1185 | 1-164-149-11 | CERAMIC CHIP | 36PF | 5% | 50V | |
| C1188 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1189 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C1192 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C1193 | 1-164-218-11 | CERAMIC CHIP | 180PF | 0.25PF | 50V | |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * CN1101 | 1-573-341-11 | CONNECTOR, BOARD TO BOARD 26P | |

< DIODE >

| Ref. No. | Part No. | Description | | Remark |
|---|---|---|---|---|
| D1101 | 8-719-404-49 | DIODE | MA111 | |
| D1102 | 8-719-027-48 | DIODE | MA142WA | |
| D1103 | 8-719-027-48 | DIODE | MA142WA | |
| D1105 | 8-719-404-49 | DIODE | MA111 | |

< FILTER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| FL1101 | 1-236-775-11 | FILTER, LOW PASS (DEM) | |
| FL1102 | 1-239-112-21 | FILTER, LOW PASS (Y) | |

< IC >

| Ref. No. | Part No. | Description | | Remark |
|---|---|---|---|---|
| IC1101 | 8-752-058-02 | IC | CXA1509AR | |

# HE-14

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| IC1102 | 8-759-070-51 | IC SN74HCU04ADB | |

< COIL >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| L1101 | 1-412-956-21 | INDUCTOR 27uH | |
| L1102 | 1-412-954-11 | INDUCTOR 18uH | |
| L1103 | 1-412-947-11 | INDUCTOR 4.7uH | |
| L1104 | 1-412-959-11 | INDUCTOR 47uH | |
| L1105 | 1-412-954-11 | INDUCTOR 18uH | |
| L1106 | 1-412-945-11 | INDUCTOR 3.3uH | |
| L1108 | 1-412-954-11 | INDUCTOR 18uH | |
| L1109 | 1-412-948-11 | INDUCTOR 5.6uH | |
| L1110 | 1-412-956-21 | INDUCTOR 27uH | |
| L1111 | 1-410-655-31 | INDUCTOR CHIP 120uH | |
| L1112 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L1113 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L1114 | 1-412-957-11 | INDUCTOR 33uH | |
| L1115 | 1-412-952-11 | INDUCTOR 12uH | |
| L1116 | 1-412-948-11 | INDUCTOR 5.6uH | |
| L1118 | 1-412-953-11 | INDUCTOR 15uH | |
| L1119 | 1-412-949-21 | INDUCTOR 6.8uH | |
| L1121 | 1-412-947-11 | INDUCTOR 4.7uH | |
| L1122 | 1-412-954-11 | INDUCTOR 18uH | |
| L1123 | 1-412-949-21 | INDUCTOR 6.8uH | |
| L1124 | 1-412-960-21 | INDUCTOR 56uH | |

< TRANSISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q1102 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1103 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1107 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1110 | 8-729-120-28 | TRANSISTOR 2SC1623 | |
| Q1111 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q1113 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1114 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q1115 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1117 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1118 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1119 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1120 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q1121 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q1123 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1125 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q1126 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1127 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q1128 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1129 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1131 | 8-729-824-02 | TRANSISTOR 2SA1838 | |
| Q1132 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1133 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q1134 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q1137 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q1138 | 8-729-420-24 | TRANSISTOR 2SB1218A | |

< RESISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R1101 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1102 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1103 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1104 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1105 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1106 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R1107 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R1108 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R1109 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R1111 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1112 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1113 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1114 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1115 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1116 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1118 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1119 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | |
| R1120 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1123 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R1124 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1125 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R1127 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R1128 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1130 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1131 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1132 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1134 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1135 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R1136 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1138 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1139 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1148 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R1149 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R1151 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R1152 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R1153 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R1154 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R1155 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1156 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1157 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1158 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R1159 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R1160 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R1161 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R1162 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R1163 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R1164 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R1165 | 1-216-814-11 | METAL CHIP | 270 | 5% | 1/16W | |
| R1166 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R1167 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1168 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R1169 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R1170 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R1171 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R1172 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R1173 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R1174 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R1175 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R1176 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R1177 | 1-216-814-11 | METAL CHIP | 270 | 5% | 1/16W | |
| R1178 | 1-216-828-11 | METAL CHIP | 3.9K | 5% | 1/16W | |
| R1179 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1180 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1182 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R1183 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W | |
| R1184 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R1186 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1187 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R1188 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R1189 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1190 | 1-216-816-11 | METAL CHIP | 390 | 5% | 1/16W | |
| R1191 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R1194 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R1196 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1197 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1198 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R1199 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R1202 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W | |
| R1203 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R1204 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R1205 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1206 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1207 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R1209 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1210 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R1214 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R1215 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R1216 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R1217 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R1218 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1219 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R1220 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1221 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1223 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R1226 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |

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* A-7056-012-A LB-35 BOARD, COMPLETE (TR70/80)
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(Ref. No. 4,000 Series)

< CONNECTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| CN801 | 1-573-812-11 | CONNECTOR, BOARD TO BOARD 12P | |

< DIODE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| D801 | 8-719-037-83 | DIODE LN1371G-(TR) | |

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LS-33 BOARD
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< DIODE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| D001 | 8-719-989-52 | DIODE GL4600S | |

< HALL >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| H001 | 8-719-987-62 | DIODE LT140SAZ | |
| H002 | 8-719-987-62 | DIODE LT140SAZ | |

< TRANSISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q001 | 8-729-012-46 | TRANSISTOR PT4600FS | |
| Q002 | 8-729-012-46 | TRANSISTOR PT4600FS | |

< RESISTOR >

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R003 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R004 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R010 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R011 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |

< SWITCH >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| S002 | 1-572-987-11 | SWITCH, PUSH (3 KEY) | |

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* A-7063-962-A MA-179 BOARD, COMPLETE
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(TR72/TR80/TR400/TR430/TR750)
(Ref. No. 7,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C001 | 1-164-343-11 | CERAMIC CHIP | 0.056uF | 10% | 25V | |
| C003 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C005 | 1-163-023-00 | CERAMIC CHIP | 0.015uF | 5% | 50V | |
| C006 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C007 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C008 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C009 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C010 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C011 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C012 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C013 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C014 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C015 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C019 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C020 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C021 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C022 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C023 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V |
| C024 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C025 | 1-163-023-00 | CERAMIC CHIP | 0.015uF | 5% | 50V |
| C026 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C027 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C030 | 1-164-343-11 | CERAMIC CHIP | 0.056uF | 10% | 25V |
| C043 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |

< CONNECTOR >

| Ref. No. | Part No. | Description |
|---|---|---|
| CN001 | 1-691-490-21 | CONNECTOR, FFC/FPC 11P |
| CN002 | 1-580-057-11 | PIN, CONNECTOR 4P |
| CN003 | 1-580-057-11 | PIN, CONNECTOR 4P |

< DIODE >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| D001 | 8-719-404-46 | DIODE | MA110 |
| D002 | 8-719-404-46 | DIODE | MA110 |
| D004 | 8-719-404-19 | DIODE | LN1251C (TALLY) |

< IC >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| IC001 | 8-759-084-53 | IC | CXA1618AN-E2 |
| IC002 | 8-749-923-29 | IC | RS-20E-T |

< JACK >

| Ref. No. | Part No. | Description |
|---|---|---|
| J001 | 1-691-737-11 | JACK (SMALL TYPE)(EXT MIC) |

< COIL >

| Ref. No. | Part No. | Description |
|---|---|---|
| L001 | 1-412-939-11 | INDUCTOR 1uH |
| L002 | 1-412-939-11 | INDUCTOR 1uH |
| L003 | 1-412-939-11 | INDUCTOR 1uH |

< TRANSISTOR >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| Q001 | 8-729-230-63 | TRANSISTOR | 2SC4116-YG |
| Q003 | 8-729-402-42 | TRANSISTOR | UN5213 |

< RESISTOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R003 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R004 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R005 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R006 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W |
| R007 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R008 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R009 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R010 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R011 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R012 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R013 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R014 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R015 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R016 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R017 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R018 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R019 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R020 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R022 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R023 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R024 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R025 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R027 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R036 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R037 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R039 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W |
| R043 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W |

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* A-7063-956-A MA-199 BOARD, COMPLETE
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(TR42/TR70/TR82/TR550)
(Ref. No. 5,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C014 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C015 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V |
| C032 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C033 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C034 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C035 | 1-162-587-11 | CERAMIC CHIP | 0.039uF | 10% | 25V |
| C036 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C037 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C040 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C041 | 1-164-345-11 | CERAMIC CHIP | 0.082uF | 10% | 25V |
| C043 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V |

< CONNECTOR >

| Ref. No. | Part No. | Description |
|---|---|---|
| CN001 | 1-691-487-21 | CONNECTOR, FFC/FPC 8P |
| CN003 | 1-580-057-11 | PIN, CONNECTOR 4P |

< DIODE >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| D001 | 8-719-404-49 | DIODE | MA111 |
| D002 | 8-719-404-49 | DIODE | MA111 |
| D004 | 8-719-404-19 | DIODE | LN1251C (TALLY) |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < IC > | |
| IC002 | 8-749-923-29 | IC RS-20ET | |
| IC003 | 8-759-822-37 | IC LA7293M-TE | |
| | | < COIL > | |
| L002 | 1-412-939-11 | INDUCTOR 1uH | |
| L003 | 1-412-939-11 | INDUCTOR 1uH | |
| | | < JACK > | |
| J001 | 1-568-027-11 | JACK, SMALL TYPE 1P (EXT MIC) | |
| | | < TRANSISTOR > | |
| Q002 | 8-729-402-63 | TRANSISTOR 2SB1218A-Q | |
| | | < RESISTOR > | |
| R027 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R028 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R029 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R030 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R031 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R032 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R033 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R043 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R044 | 1-216-853-11 | METAL CHIP 470K 5% 1/16W | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7072-000-A | SL-38 BOARD, COMPLETE<br>*********************<br>(Ref. No. 4,000 Series) | |
| | | < CAPACITOR > | |
| C543 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C544 | 1-135-211-11 | TANTAL. CHIP 6.8uF 20% 6.3V | |
| C545 | 1-135-211-11 | TANTAL. CHIP 6.8uF 20% 6.3V | |
| C546 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C547 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C551 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C553 | 1-164-361-11 | CERAMIC CHIP 0.047uF 16V | |
| C554 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C555 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C556 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C557 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| C558 | 1-164-489-11 | CERAMIC CHIP 0.22uF 10% 16V | |
| | | < CONNECTOR > | |
| CN500 | 1-691-473-21 | CONNECTOR, FFC/FPC 7P | |
| CN501 | 1-691-472-21 | CONNECTOR, FFC/FPC 6P | |
| CN502 | 1-691-482-21 | CONNECTOR, FFC/FPC 15P | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < IC > | |
| IC507 | 8-759-165-47 | IC MPC1780VFUEB | |
| | | < COIL > | |
| L505 | 1-414-078-11 | INDUCTOR 10uH | |
| | | < TRANSISTOR > | |
| Q560 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q561 | 8-729-425-50 | TRANSISTOR 2SB1462Q | |
| Q562 | 8-729-402-81 | TRANSISTOR XN4501 | |
| | | < RESISTOR > | |
| R562 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R563 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R564 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R565 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R566 | 1-218-857-11 | METAL CHIP 2.7K 0.50% 1/16W | |
| R567 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R568 | 1-216-168-00 | METAL GLAZE 56 5% 1/8W | |
| R569 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R570 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R571 | 1-218-879-11 | METAL CHIP 22K 0.50% 1/16W | |
| R572 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R590 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R591 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| | | < FLEXIBLE BOARD > | |
| W500 | 1-651-889-11 | FP-48 FLEXIBLE BOARD | |
| W501 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |

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# VC-138 VC-145

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-961-A | VC-138 BOARD, COMPLETE (TR72/430)<br>********************** | |
| * | A-7066-018-A | VC-138 BOARD, COMPLETE (TR80)<br>********************** | |
| * | A-7066-080-A | VC-138 BOARD, COMPLETE (TR400/TR750)<br>********************** | |
| * | A-7063-955-A | VC-145 BOARD, COMPLETE (TR82)<br>********************** | |
| * | A-7066-007-A | VC-145 BOARD, COMPLETE (TR70)<br>********************** | |
| * | A-7066-084-A | VC-145 BOARD, COMPLETE (TR42)<br>********************** | |
| * | A-7066-088-A | VC-145 BOARD, COMPLETE (TR550)<br>********************** | |

(Ref. No. 1,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C604 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C605 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C606 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C607 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C608 | 1-104-847-11 | TANTAL. CHIP | 22uF | 20% | 4V | (TR42/TR72/TR82/TR430/TR550) |
| C609 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C610 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C611 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | (TR42/TR72/TR82/TR430/TR550) |
| C613 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR72/TR82/TR430/TR550) |
| C614 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR72/TR82/TR430/TR550) |
| C616 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C617 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C618 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | 10% | 16V | |
| C619 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C620 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C621 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C622 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C623 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C624 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C627 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | |
| C628 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C629 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C630 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | |
| C631 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C632 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C633 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | (TR82/TR400/TR550/TR750) |
| C633 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR430) |
| C634 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C635 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | (TR82/TR400/TR550/TR750) |
| C636 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | (TR82/TR400/TR550/TR750) |
| C637 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C638 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C639 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C699 | 1-162-954-11 | CERAMIC CHIP | 120PF | 5% | 50V | (TR82/TR400/TR550/TR750) |
| C701 | 1-163-059-91 | CERAMIC CHIP | 0.01uF | 10% | 50V | |
| C702 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V | |
| C703 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C704 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C705 | 1-135-145-11 | TANTALUM CHIP | 0.47uF | 10% | 35V | |
| C706 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C708 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C709 | 1-135-214-21 | TANTAL. CHIP | 4.7uF | 20% | 20V | |
| C710 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C711 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C712 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C713 | 1-107-685-11 | TANTAL. CHIP | 15uF | 20% | 6.3V | |
| C714 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C715 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C716 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C717 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C718 | 1-162-637-11 | CERAMIC CHIP | 0.47uF | | 16V | |
| C719 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C720 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C721 | 1-162-916-11 | CERAMIC CHIP | 12PF | 5% | 50V | |
| C722 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C724 | 1-162-925-11 | CERAMIC CHIP | 68PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR430) |
| C724 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | (TR82/TR400/TR550/TR750) |
| C725 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C726 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C727 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C728 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C729 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C730 | 1-163-077-00 | CERAMIC CHIP | 0.1uF | 10% | 25V | (TR82/TR400/TR550/TR750) |
| C730 | 1-164-298-11 | CERAMIC CHIP | 0.15uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR430) |
| C731 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C732 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C733 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C734 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C735 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C737 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C739 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C741 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C742 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C743 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C744 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C745 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C746 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C747 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C748 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C749 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C750 | 1-162-971-11 | CERAMIC CHIP 0.001uF 50V | |
| C751 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C752 | 1-162-971-11 | CERAMIC CHIP 0.001uF 50V | |
| C753 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C754 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C755 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C756 | 1-104-752-11 | TANTAL. CHIP 33uF 20% 6.3V | |
| C757 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C771 | 1-164-245-11 | CERAMIC CHIP 0.015uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C772 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C773 | 1-164-299-11 | CERAMIC CHIP 0.22uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C774 | 1-128-257-21 | ELECT CHIP 33uF 20% 10V | (TR82/TR400/TR550/TR750) |
| C775 | 1-128-257-21 | ELECT CHIP 33uF 20% 10V | (TR82/TR400/TR550/TR750) |
| C776 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | (TR82/TR400/TR550/TR750) |
| C777 | 1-162-568-11 | CERAMIC CHIP 0.33uF 10% 16V | (TR82/TR400/TR550/TR750) |
| C778 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | (TR82/TR400/TR550/TR750) |
| C779 | 1-162-568-11 | CERAMIC CHIP 0.33uF 10% 16V | (TR82/TR400/TR550/TR750) |
| C780 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR82/TR400/TR550/TR750) |
| C781 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR82/TR400/TR550/TR750) |
| C782 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR82/TR400/TR550/TR750) |
| C783 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR82/TR400/TR550/TR750) |
| C784 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR82/TR400/TR550/TR750) |
| C785 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR82/TR400/TR550/TR750) |
| C786 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR82/TR400/TR550/TR750) |
| C788 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C789 | 1-164-245-11 | CERAMIC CHIP 0.015uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C790 | 1-164-299-11 | CERAMIC CHIP 0.22uF 10% 25V | (TR82/TR400/TR550/TR750) |
| C793 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR82/TR400/TR550/TR750) |
| C794 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR82/TR400/TR550/TR750) |
| | | < CONNECTOR > | |
| * CN601 | 1-764-395-21 | CONNECTOR, BOARD TO BOARD 42P | |
| CN701 | 1-750-630-11 | CONNECTOR, FFC/FPC (ZIF) 16P | |
| * CN751 | 1-764-528-11 | CONNECTOR, FFC/FPC (ZIF) 21P | |
| CN775 | 1-691-487-21 | CONNECTOR, FFC/FPC 8P | (TR82/TR400/TR550/TR750) |
| | | < TRIMMER > | |
| CT701 | 1-141-356-11 | CAP, ADJ | |
| | | < DIODE > | |
| D701 | 8-719-404-49 | DIODE MA111 | |
| D702 | 8-719-404-49 | DIODE MA111 | |
| D703 | 8-719-404-49 | DIODE MA111 | |
| D705 | 8-719-404-49 | DIODE MA111 | |
| | | < FILTER > | |
| FL601 | 1-239-352-11 | FILTER, LOW PASS | (TR82/TR400/TR550/TR750) |
| FL601 | 1-239-766-11 | FILTER, LOW PASS | (TR42/TR70/TR72/TR80/TR430) |
| | | < IC > | |
| IC601 | 8-759-044-78 | IC AK6420F-E1 | |
| IC602 | 8-759-260-67 | IC SC424608MC68HC11MA8FU | (TR42/TR70/TR72/TR80/TR82/TR430) |
| IC602 | 8-759-277-18 | IC SC424609MC68HC11MA8FU | (TR400/TR550/TR750) |
| IC603 | 8-759-064-36 | IC MB88346BPFV | |
| IC604 | 8-759-710-29 | IC NJM2235M | (TR42/TR72/TR82/TR430/TR550) |
| IC609 | 8-752-365-71 | IC CXD2150R | (TR42/TR70/TR72/TR80/TR82/TR430) |
| IC609 | 8-752-369-24 | IC CXD2150AR | (TR400/TR550/TR750) |
| IC610 | 8-752-365-72 | IC CXD2151R | |
| IC611 | 8-759-262-36 | IC CXD2133BR | |
| IC613 | 8-759-247-06 | IC CXD2152REL | (TR82/TR400/TR550/TR750) |
| IC614 | 8-759-255-09 | IC uPD6461GS-802-GLG-E2 | |
| IC701 | 8-752-355-07 | IC CXD1267N | |
| IC702 | 8-752-365-73 | IC CXD2405R | (TR82/TR400/TR550/TR750) |
| IC702 | 8-752-365-74 | IC CXD1266R | (TR42/TR70/TR72/TR80/TR430) |
| IC703 | 8-752-069-21 | IC CXA1690Q | |
| IC704 | 8-759-173-24 | IC AD875JST-REEL | (TR70/TR72/TR80/TR430) |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC704 | 8-759-263-29 | IC HD49315FEB | (TR42/TR82/TR400/TR550/TR750) |
| IC705 | 8-752-365-76 | IC CXD2407R | |
| IC751 | 8-759-701-24 | IC NJM3414M | |
| IC752 | 8-759-058-52 | IC XRA10324AF | |
| IC753 | 8-752-365-65 | IC CXD2126N | |
| IC754 | 8-759-247-07 | IC MPC17A34VMEL | |
| IC755 | 8-759-031-58 | IC SC7SU04F | |
| IC772 | 8-759-234-77 | IC TC4S66F | (TR82/TR400/TR550/TR750) |
| IC773 | 8-759-234-77 | IC TC4S66F | (TR82/TR400/TR550/TR750) |
| IC774 | 8-759-058-45 | IC NJM3403AV(TE2) | (TR82/TR400/TR550/TR750) |
| IC775 | 8-759-080-34 | IC TA75W01FU-TE12R | (TR82/TR400/TR550/TR750) |
| IC776 | 8-759-248-78 | IC MB88102PFV-G-BND-ER | (TR82/TR400/TR550/TR750) |
| IC777 | 8-752-850-54 | IC CXP87132-010R | (TR82/TR400/TR550/TR750) |
| | | < COIL > | |
| L601 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L602 | 1-414-078-11 | INDUCTOR 10uH | |
| L603 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L604 | 1-414-078-11 | INDUCTOR 10uH | |
| L605 | 1-410-391-11 | INDUCTOR CHIP 68uH | |
| L606 | 1-414-078-11 | INDUCTOR 10uH | |
| L607 | 1-414-078-11 | INDUCTOR 10uH | (TR82/TR400/TR550/TR750) |
| L608 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L609 | 1-412-979-21 | INDUCTOR 1uH | |
| L610 | 1-412-979-21 | INDUCTOR 1uH | |
| L611 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L612 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L613 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L614 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L702 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L703 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L704 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L705 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L706 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L751 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L752 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L753 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L775 | 1-412-058-11 | INDUCTOR CHIP 10uH | (TR82/TR400/TR550/TR750) |
| L777 | 1-414-078-11 | INDUCTOR 10uH | (TR82/TR400/TR550/TR750) |
| L778 | 1-414-078-11 | INDUCTOR 10uH | (TR82/TR400/TR550/TR750) |
| | | < TRANSISTOR > | |
| Q604 | 8-729-010-60 | TRANSISTOR MSA1586 | |
| Q605 | 8-729-010-60 | TRANSISTOR MSA1586 | |
| Q606 | 8-729-010-75 | TRANSISTOR MSC4116 | |
| Q607 | 8-729-010-75 | TRANSISTOR MSC4116 | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q701 | 8-729-403-27 | TRANSISTOR XN4401 | |
| Q751 | 8-729-010-75 | TRANSISTOR MSC4116 | |
| Q752 | 8-729-015-76 | TRANSISTOR UN5211 | |
| | | < RESISTOR > | |
| R601 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R602 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R603 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R604 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R605 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R606 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R607 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R608 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R609 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R610 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R611 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R612 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R613 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R614 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R615 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R616 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82) |
| R619 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | |
| R620 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R621 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R622 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R624 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR400/TR430/TR550/TR750) |
| R626 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R627 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R628 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | (TR400/TR550/TR750) |
| R629 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | (TR400/TR550/TR750) |
| R629 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430) |
| R630 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R631 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R634 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R635 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R636 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R637 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R638 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R639 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R640 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R643 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R645 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R646 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R647 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R648 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R649 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R650 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R651 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R652 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R653 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R656 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R657 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R658 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R659 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R661 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R662 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R663 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R664 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R665 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R666 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R667 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R668 | 1-216-824-11 | METAL CHIP 1.8K 5% 1/16W | |
| R669 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R670 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R701 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R702 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R703 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R704 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R705 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R709 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R710 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R711 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R712 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR430) |
| R713 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R714 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R715 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R716 | 1-218-847-11 | METAL CHIP 1K 0.50% 1/16W | |
| R717 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R718 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R719 | 1-218-876-11 | METAL CHIP 16K 0.50% 1/16W | |
| R720 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR42) |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R720 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R720 | 1-216-844-11 | METAL CHIP 82K 5% 1/16W | (TR70/TR72/TR80/TR430) |
| R721 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R722 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R723 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR72/TR80/TR430) |
| R724 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR82/TR400/TR550/TR750) |
| R725 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R739 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42) |
| R740 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR72/TR80/TR82/TR400/TR430/TR550/TR750) |
| R741 | 1-218-855-11 | METAL CHIP 2.2K 0.50% 1/16W | |
| R742 | 1-218-865-11 | METAL CHIP 5.6K 0.50% 1/16W | |
| R743 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R744 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R745 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R746 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R747 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R748 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R749 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R750 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R751 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R752 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R753 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R754 | 1-216-848-11 | METAL CHIP 180K 5% 1/16W | |
| R755 | 1-216-855-11 | METAL CHIP 680K 5% 1/16W | |
| R756 | 1-216-848-11 | METAL CHIP 180K 5% 1/16W | |
| R757 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R758 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R759 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R760 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R761 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R762 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R764 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R765 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R766 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R767 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R768 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R769 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R770 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R771 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | (TR82/TR400/TR550/TR750) |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R772 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R773 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R774 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R775 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R776 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R777 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R778 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R779 | 1-218-911-11 | METAL CHIP 470K 0.50% 1/16W | (TR82/TR400/TR550/TR750) |
| R780 | 1-218-911-11 | METAL CHIP 470K 0.50% 1/16W | (TR82/TR400/TR550/TR750) |
| R781 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R782 | 1-218-911-11 | METAL CHIP 470K 0.50% 1/16W | (TR82/TR400/TR550/TR750) |
| R783 | 1-218-911-11 | METAL CHIP 470K 0.50% 1/16W | (TR82/TR400/TR550/TR750) |
| R786 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R787 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R788 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R789 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R790 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R791 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R792 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | (TR82/TR400/TR550/TR750) |
| R793 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | (TR82/TR400/TR550/TR750) |

< VIBRATOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| X601 | 1-760-081-21 | VIBRATOR, CERAMIC (24MHz) | |
| X701 | 1-760-320-11 | VIBRATOR, CRYSTAL (28.6363MHz) | |
| X775 | 1-579-553-11 | VIBRATOR (12MHz) | (TR82/TR400/TR550/TR750) |

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* A-7063-957-A VF-65 BOARD, COMPLETE  
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(TR42/TR72/TR82/TR400/TR430/TR550/TR750)  
(Ref. No. 8,000 Series)

< CAPACITOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C901 | 1-124-635-00 | ELECT 220uF 20% | 6.3V |
| C902 | 1-163-038-11 | CERAMIC CHIP 0.1uF | 25V |
| C903 | 1-135-091-21 | TANTAL. CHIP 1uF 20% | 16V |
| C904 | 1-163-011-11 | CERAMIC CHIP 0.0015uF 10% | 50V |
| C905 | 1-104-753-11 | TANTAL. CHIP 47uF 20% | 6.3V |
| C906 | 1-162-638-11 | CERAMIC CHIP 1uF | 16V |
| C907 | 1-137-306-11 | FILM CHIP 0.1uF 5% | 16V |
| C908 | 1-163-109-00 | CERAMIC CHIP 47PF 5% | 50V |
| C909 | 1-163-009-11 | CERAMIC CHIP 0.001uF 10% | 50V |
| ⚠C910 | 1-164-758-11 | CERAMIC CHIP 0.0039uF 5% | 50V |
| ⚠C911 | 1-164-715-11 | CERAMIC CHIP 0.0068uF 5% | 50V |
| C912 | 1-127-532-11 | ELECT(SOLID) 47uF 20% | 6.3V |
| C913 | 1-124-577-11 | ELECT 82uF 20% | 10V |
| C914 | 1-128-007-11 | ELECT CHIP 2.2uF 20% | 35V |
| C915 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% | 25V |
| C916 | 1-164-611-11 | CERAMIC CHIP 0.001uF 10% | 500V |

< CONNECTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| CN901 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| CN902 | 1-573-290-11 | PIN, CONNECTOR (1.5MM) (SMD) 4P | |

< DIODE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| D901 | 8-719-404-19 | DIODE LN1251 (TALLY) | |
| D903 | 8-719-400-20 | DIODE MA152WA | |

< IC >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| IC901 | 8-759-196-14 | IC BA7149F-E2 | |

< COIL >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| L901 | 1-412-031-11 | INDUCTOR CHIP 47uH | |
| L902 | 1-410-389-31 | INDUCTOR CHIP 47uH | |
| ⚠L903 | 1-402-680-21 | COIL, FERRITE (HLC) | |

< TRANSISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠Q901 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q902 | 8-729-106-68 | TRANSISTOR 2SD1615A-GP | |
| Q903 | 8-729-216-31 | TRANSISTOR 2SA1163-G | |
| Q904 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |

< RESISTOR >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R901 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R902 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R903 | 1-216-035-00 | METAL CHIP 270 5% 1/10W | |
| ⚠R904 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| ⚠R905 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R906 | 1-216-047-00 | METAL CHIP 820 5% 1/10W | |
| R907 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| R908 | 1-216-111-00 | METAL CHIP 390K 5% 1/10W | |
| R909 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R910 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |

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| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R911 | 1-216-160-00 | METAL GLAZE 27 5% 1/8W | |
| R912 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R913 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R914 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |
| R915 | 1-216-308-00 | METAL CHIP 4.7 5% 1/10W | |
| R916 | 1-216-683-11 | METAL CHIP 22K 0.5% 1/10W | |
| R917 | 1-216-693-11 | METAL CHIP 56K 0.5% 1/10W | |
| R918 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R919 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R920 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R921 | 1-216-311-00 | METAL CHIP 6.8 5% 1/10W | |
| R922 | 1-216-101-00 | METAL CHIP 150K 5% 1/10W | |
| R923 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R924 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R925 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R926 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R927 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R928 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |

< VARIABLE RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RV903 | 1-238-086-11 | RES, ADJ, CERMET 470 | |
| RV904 | 1-223-566-11 | RES, ADJ, METAL GLAZE 1M | |

< TRANSFORMER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠T901 | 1-453-124-11 | TRANSFORMER ASSY, FLYBACK | |

< THERMISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| TH901 | 1-809-350-21 | THERMISTOR, NTC (2125) | |

< SOCKET >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠W901 | 1-540-019-21 | SOCKET ASSY, CRT | |

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* A-7066-010-A VF-66 BOARD, COMPLETE (TR70/TR80)
*********************
(Ref. No. 4,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C851 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C852 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C853 | 1-104-916-11 | TANTAL. CHIP 6.8uF 20% 20V | |
| C854 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C855 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C856 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C857 | 1-164-676-11 | CERAMIC CHIP 2200PF 5% 16V | |
| C858 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C859 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C860 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C861 | 1-104-917-11 | TANTAL. CHIP 15uF 20% 20V | |
| C862 | 1-165-178-11 | CERAMIC CHIP 6.8uF | 16V |
| C863 | 1-163-020-00 | CERAMIC CHIP 0.0082uF 10% | 50V |
| C864 | 1-163-020-00 | CERAMIC CHIP 0.0082uF 10% | 50V |
| C865 | 1-162-921-11 | CERAMIC CHIP 33PF 5% | 50V |
| C866 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C867 | 1-135-177-21 | TANTALUM CHIP 1uF 20% | 20V |
| C868 | 1-165-128-11 | CERAMIC CHIP 0.22uF | 16V |
| C869 | 1-163-020-00 | CERAMIC CHIP 0.0082uF 10% | 50V |
| C870 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN851 | 1-573-354-11 | CONNECTOR, FFC/FPC 14P | |
| CN852 | 1-573-354-11 | CONNECTOR, FFC/FPC 14P | |
| CN853 | 1-573-811-11 | CONNECTOR, BOARD TO BOARD 12P | |

< DIODE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D851 | 8-719-404-19 | DIODE LN1251C (TALLY) | |
| D852 | 8-719-043-70 | DIODE MA6S121 | |
| D853 | 8-719-802-36 | DIODE 1SS250 | |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC851 | 8-759-097-75 | IC MB3789PFV-G-BND-ER | |
| IC852 | 8-759-508-68 | IC XRA10358F-E2 | |

< COIL >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L851 | 1-412-033-11 | INDUCTOR CHIP 220uH | |
| L852 | 1-412-029-11 | INDUCTOR CHIP 10uH | |
| L853 | 1-412-033-11 | INDUCTOR CHIP 220uH | |

< TRANSISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q851 | 8-729-024-60 | TRANSISTOR MTD6N15T4 | |
| Q852 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q853 | 8-729-923-62 | TRANSISTOR DTA123JK | |

< RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R851 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R852 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R853 | 1-218-899-11 | METAL CHIP 150K 0.50% 1/16W | |
| R854 | 1-218-901-11 | METAL CHIP 180K 0.50% 1/16W | |
| R855 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R856 | 1-218-899-11 | METAL CHIP 150K 0.50% 1/16W | |
| R857 | 1-218-903-11 | METAL CHIP 220K 0.50% 1/16W | |
| R858 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R859 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R860 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R861 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R862 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R863 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R864 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R865 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R867 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | |
| R868 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R869 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R870 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R871 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | |
| R872 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R873 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R874 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R875 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R876 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R877 | 1-216-794-11 | METAL CHIP 5.6 5% 1/16W | |
| R878 | 1-216-804-11 | METAL CHIP 39 5% 1/16W | |
| R879 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R880 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R881 | 1-216-853-11 | METAL CHIP 470K 5% 1/16W | |
| R891 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |

< TRANSFORMER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠T851 | 0-396-458-00 | | |

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* A-7066-011-A VF-67 BOARD, COMPLETE (TR70/TR80)
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< CAPACITOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C901 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C902 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C903 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C904 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C905 | 1-135-091-21 | TANTAL. CHIP 1uF 20% | 16V |
| C906 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% | 25V |
| C907 | 1-135-091-21 | TANTAL. CHIP 1uF 20% | 16V |
| C908 | 1-162-919-11 | CERAMIC CHIP 22PF 5% | 50V |
| C909 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C910 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C911 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C913 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V |
| C914 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C915 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C916 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C917 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C920 | 1-165-176-11 | CERAMIC CHIP 0.047uF 10% | 16V |
| C921 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C925 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V |
| C926 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% | 6.3V |
| C927 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C928 | 1-164-344-11 | CERAMIC CHIP 0.068uF 10% | 25V |
| C929 | 1-164-344-11 | CERAMIC CHIP 0.068uF 10% | 25V |
| C930 | 1-164-344-11 | CERAMIC CHIP 0.068uF 10% | 25V |
| C931 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C932 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C933 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V |
| C934 | 1-135-145-11 | TANTALUM CHIP 0.47uF 10% | 35V |
| C935 | 1-135-179-21 | TANTAL. CHIP 2.2uF 20% | 16V |
| C936 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% | 50V |
| C937 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% | 6.3V |
| C938 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% | 25V |
| C939 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C940 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |
| C941 | 1-164-357-11 | CERAMIC CHIP 1000PF 5% | 50V |
| C942 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C943 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V |
| C945 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C946 | 1-135-179-21 | TANTAL. CHIP 2.2uF 20% | 16V |
| C947 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C948 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C949 | 1-135-178-11 | TANTAL. CHIP 1.5uF 20% | 20V |
| C950 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C951 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C953 | 1-164-346-11 | CERAMIC CHIP 1uF | 16V |
| C954 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN901 | 1-573-354-11 | CONNECTOR, FFC/FPC 14P | |
| * CN902 | 1-573-984-11 | CONNECTOR, BOARD TO BOARD 10P | |
| * CN903 | 1-573-356-11 | CONNECTOR, FFC/FPC 16P | |

< DIODE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D901 | 8-719-025-91 | DIODE MA365(E) | |
| D903 | 8-719-404-49 | DIODE MA111 | |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC901 | 8-752-067-59 | IC CXA1785R | |
| IC902 | 8-752-362-78 | IC CXD2403R | |
| IC903 | 8-759-251-40 | IC MB88E346PFV-G-BND-ER | |

< COIL >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L901 | 1-412-951-11 | INDUCTOR 10uH | |
| L902 | 1-412-962-11 | INDUCTOR 82uH | |
| L904 | 1-412-951-11 | INDUCTOR 10uH | |
| L905 | 1-412-949-21 | INDUCTOR 6.8uH | |
| L906 | 1-412-959-11 | INDUCTOR 47uH | |

< TRANSISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q901 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q902 | 8-729-402-42 | TRANSISTOR UN5213 | |

< RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R902 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R903 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R904 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R906 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R907 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R908 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R910 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R911 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R912 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R913 | 1-220-397-11 | METAL GLAZE 4.7M 5% 1/16W | |
| R914 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R919 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R920 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R921 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R922 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R923 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R924 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R925 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R926 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R930 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R931 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R933 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R934 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R936 | 1-218-873-11 | METAL CHIP 12K 0.50% 1/16W | |
| R937 | 1-218-905-11 | METAL CHIP 270K 0.50% 1/16W | |
| R938 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R939 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R946 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R947 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R948 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R949 | 1-216-807-11 | METAL CHIP 68 5% 1/16W | |
| R953 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R954 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R959 | 1-216-844-11 | METAL CHIP 82K 5% 1/16W | |
| R960 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R961 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | |
| R969 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R970 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R971 | 1-216-844-11 | METAL CHIP 82K 5% 1/16W | |
| R973 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R974 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |

< VIBRATOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| X901 | 1-579-466-11 | VIBRATOR, CRYSTAL (3.58MHz) | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-959-A | VS-104 BOARD, COMPLETE (TR72)<br>********************** | |
| * | A-7066-008-A | VS-104 BOARD, COMPLETE (TR80)<br>********************** | |
| * | A-7066-079-A | VS-104 (H) BOARD, COMPLETE (TR400)<br>************************** | |
| * | A-7066-086-A | VS-104 BOARD, COMPLETE (TR430)<br>********************** | |
| * | A-7066-134-A | VS-104 (H) BOARD, COMPLETE (TR750)<br>************************** | |
| * | A-7063-953-A | VS-112 BOARD, COMPLETE (TR82)<br>********************** | |
| * | A-7066-019-A | VS-112 BOARD, COMPLETE (TR70)<br>********************** | |
| * | A-7066-047-A | VS-112 (LL) BOARD, COMPLETE (TR42)<br>*************************** | |
| * | A-7066-085-A | VS-112 BOARD, COMPLETE (TR550)<br>********************** | |

(Ref. No. 30,000 Series)

< CAPACITOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C101 | 1-162-921-11 | CERAMIC CHIP 33PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C102 | 1-162-911-11 | CERAMIC CHIP 6PF 0.5PF 50V | (TR400/TR750) |
| C102 | 1-162-922-11 | CERAMIC CHIP 39PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C103 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C104 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C106 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C107 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C108 | 1-162-926-11 | CERAMIC CHIP 82PF 5% 50V | |
| C109 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C110 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C111 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C112 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C113 | 1-164-217-11 | CERAMIC CHIP 150PF 5% 50V | |
| C114 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C115 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C116 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C117 | 1-104-852-11 | TANTAL. CHIP 22uF 20% 6.3V | |
| C118 | 1-104-852-11 | TANTAL. CHIP 22uF 20% 6.3V | |
| C119 | 1-162-961-11 | CERAMIC CHIP 330PF 10% 50V | |
| C120 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C121 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C122 | 1-162-961-11 | CERAMIC CHIP 330PF 10% 50V | |
| C123 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C124 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C128 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C131 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C134 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C136 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C137 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C143 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V | |
| C144 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C145 | 1-104-852-11 | TANTAL. CHIP | 22uF | 20% | 6.3V | |
| C146 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C147 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C148 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C149 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C150 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C151 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C152 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C153 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C154 | 1-162-945-11 | CERAMIC CHIP | 22PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C155 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR400/TR750) |
| C157 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C158 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C159 | 1-162-922-11 | CERAMIC CHIP | 39PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C160 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C161 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V | |
| C163 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C164 | 1-162-942-11 | CERAMIC CHIP | 12PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C165 | 1-162-956-11 | CERAMIC CHIP | 180PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C166 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C167 | 1-162-926-11 | CERAMIC CHIP | 82PF | 5% | 50V | (TR72/TR80/TR400/TR430/TR750) |
| C167 | 1-164-382-11 | CERAMIC CHIP | 91PF | 5% | 50V | (TR42/TR70/TR82/TR550) |
| C168 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C169 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C170 | 1-162-915-11 | CERAMIC CHIP | 10PF | 0.5PF | 50V | (TR400/TR750) |
| C171 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V | (TR400/TR750) |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C172 | 1-162-921-11 | CERAMIC CHIP | 33PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C173 | 1-164-155-11 | CERAMIC CHIP | 75PF | 5% | 50V | (TR400/TR750) |
| C175 | 1-162-915-11 | CERAMIC CHIP | 10PF | 0.5PF | 50V | (TR400/TR750) |
| C176 | 1-162-921-11 | CERAMIC CHIP | 33PF | 5% | 50V | (TR400/TR750) |
| C177 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C178 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C179 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C190 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C202 | 1-162-944-11 | CERAMIC CHIP | 18PF | 5% | 50V | (TR400/TR750) |
| C203 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C204 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C205 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | (TR42/TR72/TR82/TR430/TR550) |
| C206 | 1-164-489-11 | CERAMIC CHIP | 0.22uF | 10% | 16V | |
| C207 | 1-162-927-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C208 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V | |
| C209 | 1-126-246-11 | ELECT CHIP | 220uF | 20% | 4V | |
| C210 | 1-162-961-11 | CERAMIC CHIP | 330PF | 10% | 50V | |
| C211 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C212 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C213 | 1-135-176-21 | TANTALUM CHIP | 0.68uF | 10% | 20V | |
| C214 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C215 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C216 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C217 | 1-135-091-21 | TANTAL. CHIP | 1uF | 20% | 16V | |
| C218 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C220 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C221 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | (TR400/TR750) |
| C222 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C223 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C225 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C226 | 1-162-926-11 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C227 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C228 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C229 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C230 | 1-135-180-21 | TANTALUM CHIP | 3.3uF | 20% | 6.3V | |
| C231 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C234 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C234 | 1-164-471-11 | CERAMIC CHIP | 680PF | 5% | 50V | (TR400/TR750) |
| C235 | 1-126-207-11 | ELECT CHIP | 33uF | 20% | 4V | |
| C237 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C238 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C239 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C240 | 1-164-392-11 | CERAMIC CHIP | 390PF | 5% | 50V | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C241 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C242 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C243 | 1-135-091-21 | TANTAL. CHIP 1uF 20% 16V | |
| C244 | 1-162-959-11 | CERAMIC CHIP 330PF 5% 50V | |
| C245 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C247 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C248 | 1-164-217-11 | CERAMIC CHIP 150PF 5% 50V | (TR400/TR750) |
| C250 | 1-164-217-11 | CERAMIC CHIP 150PF 5% 50V | (TR400/TR750) |
| C251 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | (TR400/TR750) |
| C251 | 1-162-956-11 | CERAMIC CHIP 180PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C258 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |
| C262 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C263 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C264 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |
| C265 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C266 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C267 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |
| C268 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C271 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C272 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |
| C273 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C274 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C275 | 1-162-955-11 | CERAMIC CHIP 150PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C276 | 1-162-944-11 | CERAMIC CHIP 18PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C278 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C279 | 1-164-145-11 | CERAMIC CHIP 390PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C281 | 1-162-954-11 | CERAMIC CHIP 120PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C282 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C284 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C285 | 1-135-318-11 | TANTAL. CHIP 33uF 20% 4V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C286 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C287 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C289 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C290 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C291 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C292 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | (TR400/TR750) |
| C294 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR400/TR750) |
| C295 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | (TR400/TR750) |
| C296 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR400/TR750) |
| C297 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | (TR400/TR750) |
| C298 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR400/TR750) |
| C299 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C300 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR400/TR750) |
| C301 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C302 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | (TR400/TR750) |
| C303 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR400/TR750) |
| C304 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR400/TR750) |
| C305 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| C306 | 1-162-921-11 | CERAMIC CHIP 33PF 5% 50V | (TR400/TR750) |
| C307 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C310 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C311 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR400/TR750) |
| C312 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C319 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C322 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR42/TR72/TR82/TR430/TR550) |
| C323 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | (TR42/TR72/TR82/TR430/TR550) |
| C324 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | (TR42/TR72/TR82/TR430/TR550) |
| C328 | 1-164-361-11 | CERAMIC CHIP 0.047uF 16V | |
| C331 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C333 | 1-162-941-11 | CERAMIC CHIP 10PF 0.5PF 50V | |
| C334 | 1-162-935-11 | CERAMIC CHIP 4PF 0.25PF 50V | |
| C500 | 1-162-968-11 | CERAMIC CHIP 0.0047uF 10% 50V | |
| C501 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C502 | 1-164-361-11 | CERAMIC CHIP 0.047uF 16V | |
| C503 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| C504 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C506 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| C507 | 1-162-918-11 | CERAMIC CHIP 18PF 5% 50V | |
| C508 | 1-162-919-11 | CERAMIC CHIP 22PF 5% 50V | |
| C509 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C510 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C511 | 1-164-361-11 | CERAMIC CHIP 0.047uF 16V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C512 | 1-164-360-11 | CERAMIC CHIP 0.1uF | 16V |
| C513 | 1-164-361-11 | CERAMIC CHIP 0.047uF | 16V |
| C514 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C515 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C516 | 1-164-361-11 | CERAMIC CHIP 0.047uF | 16V |
| C518 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% | 25V |
| C519 | 1-164-346-11 | CERAMIC CHIP 1uF | 16V |
| C521 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% | 25V |
| C522 | 1-164-361-11 | CERAMIC CHIP 0.047uF | 16V |
| C523 | 1-164-492-11 | CERAMIC CHIP 0.15uF 10% | 16V |
| C524 | 1-164-492-11 | CERAMIC CHIP 0.15uF 10% | 16V |
| C526 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% | 25V |
| C527 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% | 25V |
| C528 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% | 25V |
| C529 | 1-164-677-11 | CERAMIC CHIP 0.033uF 10% | 16V |
| C530 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% | 25V |
| C531 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% | 25V |
| C532 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% | 25V |
| C533 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% | 50V |
| C534 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% | 50V |
| C535 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% | 25V |
| C536 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% | 25V |
| C537 | 1-164-360-11 | CERAMIC CHIP 0.1uF | 16V |
| C538 | 1-162-995-11 | CERAMIC CHIP 0.022uF | 50V |
| C539 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C540 | 1-162-913-11 | CERAMIC CHIP 8PF 0.5PF | 50V |
| C541 | 1-164-360-11 | CERAMIC CHIP 0.1uF | 16V |
| C543 | 1-162-913-11 | CERAMIC CHIP 8PF 0.5PF | 50V |
| C544 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C545 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C547 | 1-164-360-11 | CERAMIC CHIP 0.1uF | 16V |
| C548 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C549 | 1-162-995-11 | CERAMIC CHIP 0.022uF | 50V |
| C550 | 1-128-530-11 | ELECT CHIP 33uF 20% | 10V |
| C552 | 1-164-362-11 | CERAMIC CHIP 470PF 5% | 50V |
| C559 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C560 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C561 | 1-128-004-11 | ELECT CHIP 10uF 20% | 16V |
| C562 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C563 | 1-164-816-11 | CERAMIC CHIP 220PF 2% | 50V |
| C564 | 1-164-816-11 | CERAMIC CHIP 220PF 2% | 50V |
| C565 | 1-162-995-11 | CERAMIC CHIP 0.022uF | 50V |
| C566 | 1-162-995-11 | CERAMIC CHIP 0.022uF | 50V |
| C567 | 1-164-173-11 | CERAMIC CHIP 0.0039uF 10% | 50V |
| C568 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C569 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C570 | 1-165-176-11 | CERAMIC CHIP 0.047uF 10% | 16V |
| C571 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% | 25V |
| C572 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C573 | 1-162-909-11 | CERAMIC CHIP 4PF 0.25PF | 50V |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C951 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V |
| C952 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V |
| C953 | 1-126-205-11 | ELECT CHIP 47uF 20% | 6.3V |
| C955 | 1-162-974-11 | CERAMIC CHIP 0.01uF | 50V |
| C959 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V<br>(TR42/TR72/TR82/TR430/TR550) |
| C961 | 1-164-346-11 | CERAMIC CHIP 1uF | 16V<br>(TR42/TR72/TR82/TR430/TR550) |
| C1251 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V<br>(TR70/TR80/TR400/TR750) |
| C1252 | 1-164-505-11 | CERAMIC CHIP 2.2uF | 16V<br>(TR70/TR80/TR400/TR750) |
| C1254 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% | 25V<br>(TR400/TR750) |
| C1255 | 1-164-005-11 | CERAMIC CHIP 0.47uF | 25V<br>(TR400/TR750) |
| C1256 | 1-164-005-11 | CERAMIC CHIP 0.47uF | 25V<br>(TR70/TR80/TR400/TR750) |
| C1257 | 1-126-246-11 | ELECT CHIP 220uF 20% | 4V<br>(TR400/TR750) |
| C1258 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% | 10V<br>(TR400/TR750) |
| C1260 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% | 25V<br>(TR400/TR750) |
| C1261 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V<br>(TR400/TR750) |
| C1262 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V<br>(TR400/TR750) |
| C1263 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V<br>(TR70/TR80/TR400/TR750) |
| C1264 | 1-164-156-11 | CERAMIC CHIP 0.1uF | 25V<br>(TR70/TR80/TR400/TR750) |
| C1268 | 1-135-259-11 | TANTAL. CHIP 10uF 20% | 6.3V<br>(TR70/TR80/TR400/TR750) |
| C1274 | 1-164-005-11 | CERAMIC CHIP 0.47uF | 25V<br>(TR400/TR750) |
| C1275 | 1-162-945-11 | CERAMIC CHIP 22PF 5% | 50V<br>(TR400/TR750) |

< CONNECTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN101 | 1-691-492-21 | CONNECTOR, FFC/FPC 13P | |
| CN102 | 1-580-789-11 | PIN, CONNECTOR (SMD) 6P | |
| CN201 | 1-573-353-11 | CONNECTOR, FFC/FPC 13P | |
| CN202 | 1-691-536-11 | CONNECTOR, BOARD TO BOARD 24P | (TR42/TR70/TR82/TR550) |
| * CN202 | 1-691-929-11 | CONNECTOR, BOARD TO BOARD 34P | (TR72/TR80/TR400/TR430/TR750) |
| * CN203 | 1-764-396-21 | CONNECTOR, BOARD TO BOARD 42P | |
| * CN205 | 1-573-313-11 | CONNECTOR, BOARD TO BOARD 26P | (TR400/TR750) |
| CN206 | 1-573-923-21 | CONNECTOR, FFC/FPC (ZIF) 14P | |
| CN501 | 1-691-388-11 | CONNECTOR, FFC/FPC (ZIF) 24P | (TR400/TR750) |
| * CN502 | 1-764-708-11 | CONNECTOR, FFC/FPC (LIF) 9P | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * CN503 | 1-764-717-11 | CONNECTOR, FFC/FPC (LIF) 18P | |
| CN504 | 1-695-325-11 | CONNECTOR, BOARD TO BOARD 42P | |
| * CN505 | 1-764-397-21 | CONNECTOR, BOARD TO BOARD 42P | |

< DIODE >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| D101 | 8-719-800-76 | DIODE 1SS226 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| D102 | 8-719-404-49 | DIODE MA111 | |
| D201 | 8-719-027-50 | DIODE MA142WK | |
| D204 | 8-719-027-50 | DIODE MA142WK | |
| D208 | 8-719-027-50 | DIODE MA142WK | |
| D216 | 8-719-027-50 | DIODE MA142WK | |
| D217 | 8-719-404-49 | DIODE MA111 | |
| D218 | 8-719-800-76 | DIODE 1SS226 | |
| D321 | 8-719-045-87 | DIODE MA4Z082WA | |
| D323 | 8-719-017-25 | DIODE 02DZ13-TPH3 | (TR400/TR750) |
| D324 | 8-719-017-25 | DIODE 02DZ13-TPH3 | (TR400/TR750) |
| ⚠D501 | 8-719-421-27 | DIODE MA728 | |
| D504 | 8-719-404-49 | DIODE MA111 | |
| D505 | 8-719-404-49 | DIODE MA111 | |
| D1251 | 8-719-027-50 | DIODE MA142WK | (TR400/TR750) |
| D1252 | 8-719-027-50 | DIODE MA142WK | (TR400/TR750) |
| D1253 | 8-719-045-87 | DIODE MA4Z082WA | (TR400/TR750) |
| D1254 | 8-719-045-87 | DIODE MA4Z082WA | (TR400/TR750) |
| D1255 | 8-719-017-25 | DIODE 02DZ13-TPH3 | (TR400/TR750) |

< FILTER >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| FL201 | 1-236-757-21 | FILTER, LOW PASS (C) | |
| FL202 | 1-236-773-21 | FILTER, LOW PASS (Y) | (TR400/TR750) |

< IC >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| IC102 | 8-752-069-78 | IC CXA1704R | |
| IC201 | 8-752-068-58 | IC CXA1700R | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| IC201 | 8-752-069-22 | IC CXA1810R | (TR400/TR750) |
| IC203 | 8-752-351-22 | IC CXL5502N | |
| IC204 | 8-752-351-22 | IC CXL5502N | (TR400/TR750) |
| IC205 | 8-752-053-21 | IC CXA1211M | |
| IC207 | 8-759-031-58 | IC SC7SU04F | (TR400/TR750) |
| IC208 | 8-759-710-07 | IC NJM2234M | (TR42/TR72/TR82/TR430/TR550) |
| IC251 | 8-752-069-60 | IC CXA1812Q-T4 | (TR70/TR80/TR400/TR750) |
| IC501 | 8-759-044-78 | IC AK6420F-E1 | |
| IC502 | 8-759-197-68 | IC S-8423DFT | |
| IC503 | 8-759-267-67 | IC MB89098PFV-G-107-BND | |
| IC505 | 8-752-851-37 | IC CXP87132-009R | |
| IC506 | 8-759-169-11 | IC CXA1575M-E2 | |
| IC508 | 8-759-249-80 | IC MB4470PFQ-G-BND-ER | |
| IC951 | 8-759-169-02 | IC MB88344BPFV-G-BND-ER | |

< COIL >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| L102 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L103 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L104 | 1-412-951-11 | INDUCTOR 10uH | |
| L105 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L108 | 1-412-060-11 | INDUCTOR CHIP 22uH | |
| L109 | 1-412-957-11 | INDUCTOR 33uH | |
| L110 | 1-410-657-21 | INDUCTOR CHIP 180uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L111 | 1-412-950-11 | INDUCTOR 8.2uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L112 | 1-412-280-31 | INDUCTOR 330uH | |
| L113 | 1-412-957-11 | INDUCTOR 33uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L114 | 1-412-282-41 | INDUCTOR 470uH | |
| L115 | 1-412-280-31 | INDUCTOR 330uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L116 | 1-410-657-21 | INDUCTOR CHIP 180uH | |
| L118 | 1-410-655-31 | INDUCTOR CHIP 120uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L119 | 1-412-953-11 | INDUCTOR 15uH | (TR400/TR750) |
| L120 | 1-412-951-11 | INDUCTOR 10uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L121 | 1-412-951-11 | INDUCTOR 10uH | (TR400/TR750) |
| L122 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L123 | 1-412-949-21 | INDUCTOR 6.8uH | (TR400/TR750) |
| L201 | 1-412-963-11 | INDUCTOR 100uH | (TR400/TR750) |
| L202 | 1-414-078-11 | INDUCTOR 10uH | |
| L203 | 1-412-955-11 | INDUCTOR 22uH | |
| L204 | 1-412-963-11 | INDUCTOR 100uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L207 | 1-412-945-11 | INDUCTOR 3.3uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L209 | 1-412-960-21 | INDUCTOR 56uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L213 | 1-412-953-11 | INDUCTOR 15uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L214 | 1-412-962-11 | INDUCTOR 82uH | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| L500 | 1-414-078-11 | INDUCTOR 10uH | |
| L501 | 1-414-078-11 | INDUCTOR 10uH | |
| L502 | 1-414-072-11 | INDUCTOR 1uH | |
| L503 | 1-412-961-11 | INDUCTOR 68uH | |
| L504 | 1-414-078-11 | INDUCTOR 10uH | |
| L506 | 1-414-078-11 | INDUCTOR 10uH | |
| L951 | 1-414-078-11 | INDUCTOR 10uH | |
| L952 | 1-414-072-11 | INDUCTOR 1uH | |
| L1251 | 1-414-078-11 | INDUCTOR 10uH | (TR400/TR750) |
| L1252 | 1-414-078-11 | INDUCTOR 10uH | (TR70/TR80/TR400/TR750) |
| L1253 | 1-412-963-11 | INDUCTOR 100uH | (TR400/TR750) |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < IC LINK > | |
| ⚠PS500 | 1-576-122-21 | LINK, IC CCP2E10 0.4A | |
| ⚠PS501 | 1-576-122-21 | LINK, IC CCP2E10 0.4A | |
| | | < TRANSISTOR > | |
| Q101 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q102 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q103 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q104 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q105 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q106 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q109 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q111 | 8-729-015-74 | TRANSISTOR UN5111 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q112 | 8-729-117-73 | TRANSISTOR 2SC4178 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q113 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q114 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q115 | 8-729-012-50 | TRANSISTOR 2SC4400 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q116 | 8-729-012-50 | TRANSISTOR 2SC4400 | (TR400/TR750) |
| Q117 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q118 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR400/TR750) |
| Q119 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q120 | 8-729-402-42 | TRANSISTOR UN5213 | (TR400/TR750) |
| Q121 | 8-729-012-50 | TRANSISTOR 2SC4400 | (TR400/TR750) |
| Q124 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR400/TR750) |
| Q125 | 8-729-402-42 | TRANSISTOR UN5213 | (TR400/TR750) |
| Q126 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q129 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q132 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q133 | 8-729-012-50 | TRANSISTOR 2SC4400 | |
| Q134 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q135 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q202 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q204 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q216 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q217 | 8-729-420-12 | TRANSISTOR XN4213 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q219 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q221 | 8-729-013-15 | TRANSISTOR 2SC4909 | (TR400/TR750) |
| Q222 | 8-729-403-35 | TRANSISTOR UN5113 | (TR400/TR750) |
| Q223 | 8-729-013-15 | TRANSISTOR 2SC4909 | (TR400/TR750) |
| Q224 | 8-729-402-42 | TRANSISTOR UN5213 | (TR400/TR750) |
| Q225 | 8-729-015-76 | TRANSISTOR UN5211 | |
| Q226 | 8-729-807-86 | TRANSISTOR 2SB1295 | |
| Q227 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q228 | 8-729-807-86 | TRANSISTOR 2SB1295 | |
| Q232 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q234 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q235 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q236 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q237 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q238 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q240 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q242 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q243 | 8-729-402-42 | TRANSISTOR UN5213 | (TR400/TR750) |
| Q244 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q245 | 8-729-403-35 | TRANSISTOR UN5113 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q246 | 8-729-402-81 | TRANSISTOR XN4501 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q247 | 8-729-402-42 | TRANSISTOR UN5213 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q248 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR400/TR750) |
| Q249 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR400/TR750) |
| Q253 | 8-729-025-16 | TRANSISTOR UN511D | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q254 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q255 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q256 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q257 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q258 | 8-729-420-24 | TRANSISTOR 2SB1218A | |
| Q259 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q260 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q261 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR72/TR82/TR430/TR550) |
| Q265 | 8-729-823-16 | TRANSISTOR 2SC4555 | (TR400/TR750) |
| Q266 | 8-729-402-42 | TRANSISTOR UN5213 | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| Q267 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q500 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR72/TR80/TR400/TR430/TR750) |
| Q501 | 8-729-403-27 | TRANSISTOR XN4401 | |
| Q502 | 8-729-120-28 | TRANSISTOR 2SC1623 | |
| Q503 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q504 | 8-729-120-28 | TRANSISTOR 2SC1623 | |
| Q506 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q507 | 8-729-120-28 | TRANSISTOR 2SC1623 | |
| Q951 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q952 | 8-729-230-63 | TRANSISTOR 2SC4116 | |
| Q956 | 8-729-230-63 | TRANSISTOR 2SC4116 | |

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|---|---|
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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q958 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR72/TR82/TR430/TR550) |
| Q960 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR42/TR72/TR82/TR430/TR550) |
| Q1252 | 8-729-402-42 | TRANSISTOR UN5213 | (TR400/TR750) |
| Q1253 | 8-729-823-16 | TRANSISTOR 2SC4555 | (TR400/TR750) |
| Q1254 | 8-729-823-16 | TRANSISTOR 2SC4555 | (TR400/TR750) |
| Q1257 | 8-729-420-24 | TRANSISTOR 2SB1218A | (TR70/TR80) |
| Q1258 | 8-729-230-63 | TRANSISTOR 2SC4116 | (TR400/TR750) |
| Q1259 | 8-729-420-20 | TRANSISTOR XN4312 | (TR400/TR750) |
| | | < RESISTOR > | |
| R101 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R102 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R103 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R104 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR400/TR750) |
| R104 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R105 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | (TR400/TR750) |
| R105 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R106 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R107 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R108 | 1-216-800-11 | METAL GLAZE 18 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R108 | 1-216-801-11 | METAL CHIP 22 5% 1/16W | (TR400/TR750) |
| R109 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | (TR400/TR750) |
| R109 | 1-216-804-11 | METAL CHIP 39 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R110 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R111 | 1-218-875-11 | METAL CHIP 15K 0.50% 1/16W | |
| R112 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R114 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R114 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR400/TR750) |
| R118 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R119 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R120 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R122 | 1-216-853-11 | METAL CHIP 470K 5% 1/16W | |
| R123 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR72/TR80/TR400/TR430/TR750) |
| R123 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | (TR42/TR70/TR82/TR550) |
| R124 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R126 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R127 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R128 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R130 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R132 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R133 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R134 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R135 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R136 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R137 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R138 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | |
| R139 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R140 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R141 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R142 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R143 | 1-216-808-11 | METAL CHIP 82 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R144 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R146 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R147 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R148 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R149 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R150 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R151 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R152 | 1-216-824-11 | METAL CHIP 1.8K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R153 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | (TR42/TR70/TR82/TR550) |
| R153 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR72/TR80/TR400/TR430/TR750) |
| R154 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R155 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR400/TR750) |
| R156 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR400/TR750) |
| R157 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR400/TR750) |
| R158 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R159 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R160 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R161 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR400/TR750) |
| R162 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R163 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R164 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R165 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R166 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R167 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR400/TR750) |
| R168 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR400/TR750) |
| R169 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | (TR400/TR750) |
| R170 | 1-216-822-11 | METAL CHIP 1.2K 5% 1/16W | (TR400/TR750) |
| R171 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R173 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | (TR400/TR750) |
| R174 | 1-216-816-11 | METAL CHIP 390 5% 1/16W | (TR400/TR750) |
| R175 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R178 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R179 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R180 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R181 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R182 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR400/TR750) |
| R185 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R186 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R187 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R188 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R189 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R190 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR400/TR750) |
| R191 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR400/TR750) |
| R193 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R194 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R195 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R196 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R197 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R198 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R199 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R200 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR400/TR750) |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R201 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R202 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R203 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R205 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R206 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR400/TR750) |
| R206 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R207 | 1-216-804-11 | METAL CHIP 39 5% 1/16W | |
| R208 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR400/TR750) |
| R209 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R210 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R211 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | |
| R213 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R214 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R215 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R216 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R218 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R219 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R220 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R221 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R222 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R223 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R224 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R226 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R230 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R231 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R232 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R234 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R235 | 1-218-877-11 | METAL CHIP 18K 0.50% 1/16W | |
| R241 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R245 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R246 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R247 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R253 | 1-218-849-11 | METAL CHIP 1.2K 0.50% 1/16W | |
| R255 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R256 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R259 | 1-218-859-11 | METAL CHIP 3.3K 0.50% 1/16W | |
| R261 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R262 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R263 | 1-218-839-11 | METAL GLAZE 470 0.50% 1/16W | |
| R264 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | (TR400/TR750) |
| R265 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R266 | 1-218-837-11 | METAL GLAZE 390 0.50% 1/16W | (TR400/TR750) |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R272 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R273 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R274 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R275 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R276 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R277 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | (TR400/TR750) |
| R278 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | (TR400/TR750) |
| R279 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R280 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R281 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R282 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R283 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R285 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R286 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R288 | 1-216-844-11 | METAL CHIP 82K 5% 1/16W | |
| R289 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R290 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R291 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R293 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR400/TR750) |
| R295 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R296 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R297 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R300 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R302 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R303 | 1-216-810-11 | METAL CHIP 120 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R304 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R305 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R307 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R308 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R309 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R312 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R313 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R314 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R315 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R316 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R317 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R318 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R319 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R321 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R322 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R323 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R324 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R325 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R326 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R328 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R329 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R331 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R333 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R334 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R338 | 1-216-812-11 | METAL CHIP 180 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R339 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R342 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R343 | 1-216-853-11 | METAL CHIP 470K 5% 1/16W | (TR400/TR750) |
| R346 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | (TR400/TR750) |
| R347 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R348 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R349 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R350 | 1-216-844-11 | METAL CHIP 82K 5% 1/16W | (TR400/TR750) |
| R351 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR400/TR750) |
| R354 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R355 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | (TR400/TR750) |
| R356 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | (TR400/TR750) |
| R357 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R358 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR400/TR750) |
| R359 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | (TR400/TR750) |
| R360 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | (TR400/TR750) |
| R361 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR400/TR750) |

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| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R362 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | (TR400/TR750) |
| R363 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | (TR400/TR750) |
| R364 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R366 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| R368 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R373 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R375 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | (TR400/TR750) |
| R377 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R378 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R380 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R381 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R383 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R387 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R391 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R398 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R399 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R500 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R501 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R502 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R503 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R505 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R506 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | (TR70/TR80) |
| R506 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| R507 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R508 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R509 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W | |
| R510 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R511 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R512 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R513 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R514 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R515 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R517 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R518 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R519 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R520 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R522 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R523 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R525 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R526 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R527 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R528 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R529 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R530 | 1-216-019-00 | METAL CHIP | 56 | 5% | 1/10W | |
| R531 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R532 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R533 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R534 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R535 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R536 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R537 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R538 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R539 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R540 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R541 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |
| R542 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R543 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R544 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R546 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R548 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R549 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R550 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R551 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R552 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R553 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R554 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R555 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R556 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R558 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R560 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R561 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R562 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W | |
| R563 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R567 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R569 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | (TR72/TR80/TR400/TR430/TR750) |
| R570 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R572 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R573 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R575 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R577 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R578 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R579 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R580 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R581 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R582 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R583 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | (TR42/TR70/TR82/TR550) |
| R584 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R585 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R586 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W | |
| R587 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R588 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R589 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R591 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R592 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R593 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R594 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R595 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R596 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R597 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R943 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR80) |
| R954 | 1-216-138-00 | METAL CHIP 3.3 5% 1/8W | |
| R955 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R956 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R957 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R961 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R962 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R964 | 1-216-822-11 | METAL CHIP 1.2K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R965 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R966 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R967 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R968 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R972 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | (TR42/TR72/TR82/TR430/TR550) |
| R1251 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR400/TR750) |
| R1252 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R1254 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R1276 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR70/TR80) |
| R1277 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR70/TR80) |
| R1278 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR70/TR80) |
| R1259 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | (TR400/TR750) |
| R1260 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | (TR400/TR750) |
| R1265 | 1-216-804-11 | METAL CHIP 39 5% 1/16W | (TR400/TR750) |
| R1266 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | (TR400/TR750) |
| R1267 | 1-216-804-11 | METAL CHIP 39 5% 1/16W | (TR400/TR750) |
| R1268 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | (TR400/TR750) |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| R1270 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80/TR400/TR750) |
| R1279 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR400/TR750) |
| R1280 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | (TR400/TR750) |
| R1281 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | (TR400/TR750) |
| R1282 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR400/TR750) |
| R1283 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R1284 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR400/TR750) |
| R1285 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | (TR70/TR80) |
| R1286 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR400/TR750) |
| R1287 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | (TR400/TR750) |
| R1400 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1401 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R1403 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R1404 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R1406 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |

### < NETWORK >

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| RB199 | 1-236-971-11 | NETWORK, RES 0 | (TR70/TR80) |
| RB500 | 1-236-436-11 | NETWORK, RES 100K | |
| RB501 | 1-236-432-11 | NETWORK, RES 47K | |
| RB502 | 1-236-971-11 | NETWORK, RES 0 | |
| RB503 | 1-236-432-11 | NETWORK, RES 47K | |
| RB504 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB505 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB506 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB507 | 1-236-448-11 | NETWORK, RES 1.0M | |
| RB508 | 1-236-436-11 | NETWORK, RES 100K | |
| RB509 | 1-236-444-11 | NETWORK, RES 470K | |
| RB510 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB512 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB513 | 1-236-971-11 | NETWORK, RES 0 | |
| RB514 | 1-236-907-11 | RESISTOR, NETWORK (CHIP TYPE) 100K | |
| RB515 | 1-236-904-11 | RESISTOR, NETWORK (CHIP TYPE) 1K | |
| RB516 | 1-236-904-11 | RESISTOR, NETWORK (CHIP TYPE) 1K | |
| RB518 | 1-236-971-11 | NETWORK, RES 0 | |
| RB519 | 1-236-971-11 | NETWORK, RES 0 | |
| RB520 | 1-236-904-11 | RESISTOR, NETWORK (CHIP TYPE) 1K | |
| RB521 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB522 | 1-236-448-11 | NETWORK, RES 1.0M | |
| RB523 | 1-236-432-11 | NETWORK, RES 47K | |
| RB524 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) 10K | |
| RB525 | 1-236-424-11 | NETWORK, RES 10K | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RB526 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) 10K | |
| RB527 | 1-236-424-11 | NETWORK, RES 10K | |
| RB528 | 1-236-424-11 | NETWORK, RES 10K | |
| RB529 | 1-236-424-11 | NETWORK, RES 10K | |
| RB530 | 1-236-424-11 | NETWORK, RES 10K | |
| RB531 | 1-236-424-11 | NETWORK, RES 10K | |
| RB532 | 1-236-424-11 | NETWORK, RES 10K | |
| RB533 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB534 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB535 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) 10K | |
| RB536 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB537 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB542 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB543 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB544 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB547 | 1-236-444-11 | NETWORK, RES 470K | (TR72/TR80/TR400/TR430/TR750) |
| RB548 | 1-236-416-11 | NETWORK, RES 2.2K | |
| RB549 | 1-236-971-11 | NETWORK, RES 0 | |
| RB550 | 1-236-971-11 | NETWORK, RES 0 | |
| RB551 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB552 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB553 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB554 | 1-236-971-11 | NETWORK, RES 0 | |
| | | < VARIABLE RESISTOR > | |
| RV202 | 1-238-086-11 | RES, ADJ, CERMET 470 | |
| | | < VIBRATOR > | |
| X201 | 1-579-365-21 | VIBRATOR, CRYSTAL (3.58MHz) | |
| X501 | 1-579-550-11 | VIBRATOR, CRYSTAL (32kHz) | |
| X502 | 1-760-314-11 | VIBRATOR, CRYSTAL (11.895MHz) | |
| | | < VIBRATOR > | |
| XTL501 | 1-579-369-21 | VIBRATOR (10MHz) | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7072-002-A | ZB-2 BOARD, COMPLETE<br>******************** | (Ref. No. 4,000 Series) |
| | | < BUZZER > | |
| BU101 | 1-529-107-11 | BUZZER, PIEZOELECTRIC | |
| | | < CAPACITOR > | |
| C102 | 1-164-346-11 | CERAMIC CHIP 1uF | 16V |
| C103 | 1-164-346-11 | CERAMIC CHIP 1uF | 16V |
| | | < CONNECTOR > | |
| CN101 | 1-691-483-21 | CONNECTOR, FFC/FPC 4P | |
| | | < BATTERY HOLDER > | |
| LI101 | 1-550-104-11 | HOLDER, BATTERY | |

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MISCELLANEOUS
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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 110 | 1-810-535-11 | DISPLAY PANEL, LIQUID CRYSTAL | (TR400/TR750) |
| 111 | 1-467-676-11 | SWITCH BLOCK, CONTROL (CK) | (TR42/TR82/TR550) |
| 111 | 1-467-676-21 | SWITCH BLOCK, CONTROL (CK) | (TR70/TR72/TR430) |
| 111 | 1-467-676-41 | SWITCH BLOCK, CONTROL (CK) | (TR400/TR750) |
| ⚠162 | 1-452-673-11 | CRT ASSY (M01KXX90WB) | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| 163 | 1-651-894-11 | FP-86 FLEXIBLE BOARD | (TR42/TR72/TR82/TR400/TR430/TR550/TR750) |
| 167 | 1-651-903-11 | FP-92 FLEXIBLE BOARD | (TR70/TR80) |
| 168 | 1-651-893-11 | FP-85 FLEXIBLE BOARD | (TR70/TR80) |
| 171 | 1-517-325-11 | LANP, FLUORESCENT (0.55 INCH) | (TR70/TR80) |
| 181 | 8-753-015-00 | LCX005AK-1 | (TR70/TR80) |
| 201 | 1-467-649-12 | SWITCH BLOCK, CONTROL (FK) | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| 201 | 1-467-649-31 | SWITCH BLOCK, CONTROL (FK) | (TR400/TR750) |
| 208 | 1-691-471-11 | CONNECTOR, TRANSLATION 11P | |
| 212 | 1-651-891-11 | FP-52 FLEXIBLE BOARD | (TR42/TR70/TR72/TR80/TR82/TR430/TR550) |
| 212 | 1-651-892-11 | FP-53 FLEXIBLE BOARD | (TR400/TR750) |
| 260 | 1-765-361-11 | CABLE, FLAT (FFC-115) | (TR72/TR80/TR400/TR430/TR750) |
| 260 | 1-765-362-11 | CABLE, FLAT (FFC-134) | (TR42/TR70/TR82/TR550) |
| 262 | 1-547-716-11 | LENS, ZOOM (VCL-5412WA) | (TYPE II) |
| 262 | 8-848-704-01 | DEVICE, LENS LSV-140A | (TYPE I) |
| 264 | 1-547-529-21 | FILTER BLOCK, OPTICAL | (TR82/TR400/TR550/TR750) |
| 264 | 1-547-558-21 | FILTER BLOCK, OPTICAL | (TR42/TR70/TR80/TR430) |
| 871 | 1-641-643-12 | FP-444 FLEXIBLE BOARD | |
| 872 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | |
| IC691 | A-7030-373-A | CCD BLOCK ASSY (AUTO) (059V SERVICE) (CCD IMAGER) | (TR82/TR400/TR550/TR750) |
| IC691 | A-7030-368-A | CCD BLOCK ASSY (AUTO) (054 SERVICE) (CCD IMAGER) | (TR42/TR70/TR72/TR80/TR430) |
| J201 | 1-537-731-11 | TERMINAL BOARD | (TR42/TR70/TR82/TR550) |
| J201 | 1-537-731-21 | TERMINAL BOARD | (TR72/TR80/TR430) |
| J201 | 1-537-731-31 | TERMINAL BOARD | (TR400/TR750) |
| M002 | 1-542-162-11 | MICROHONE UNIT | |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

# 6-6. INTERFACE

## 6-6-1. System Control – Video/Audio Block Interface (VS BOARD)

| NAME | I/O | No. | VTR MODE | | | | CAMERA MODE | |
|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | PB | STAND BY | REC |
| SP/$\overline{\text{LP}}$ | O | IC505 (71) | H | H | H | *1 | H | H |
| VA PB MODE | O | IC505 (95) | L | L | L | H | L | L |
| AUDIO MUTE | O | IC505 ㊻ | L | L | L | L | L | L |
| VIDEO MUTE | O | IC505 ㊼ | H | H | H | *6 | L | L |
| CAM/$\overline{\text{LINE}}$ | O | IC505 ㉖ | L | L | L | L | H | H |
| JOG VD | O | IC505 ③ | L | L | L | L | L | L |
| RP PB MODE | O | IC505 ① | H | H | H | H | H | L |
| $\overline{\text{FE ON}}$ | O | IC505 ② | H | H | H | H | H | L |
| RF SWP | O | IC505 (97) | L | *2 | *2 | *2 | *2 | *2 |
| JOG | O | IC505 ④ | L | L | L | L | L | L |
| $\overline{\text{CS VIDEO}}$ | O | IC505 ㉞ | V period "L" pulse | | | | | |
| CS DA | O | IC505 ㊲ | V period 'H" pulse | | | | | |
| DATA TO SLVE | O | IC503 (76) | V period pulse train | | | | | |
| $\overline{\text{MODECON SCK}}$ | I | IC503 (77) | V period pulse train | | | | | |
| SP/$\overline{\text{LP}}$ DET | I | IC505 (81) | L | *3 | *3 | L | H | H |
| CLOG DET | I | IC505 (82) | L | *4 | *4 | *4 | *4 | H |
| VTR SYNC | I | IC505 (64) | L | *5 | *5 | *5 | *5 | *5 |
| COMP REC | O | IC505 ㉕ | L | L | L | L | L | L |

*1. Outputs discrimination result of the playback tape.
"H" : SP mode, "L": LP mode.
*2. 30 Hz duty 50% pulse (synchronized with drum rotation)
*3. "H": SP recording area on tape. "L": LP recording area.
*4. "H": no recording area.
*5. Composite sync signal.
*6. "H" when tape no signal.

## 6-6-2. System Control – Servo Block Interface

| NAME | I/O | No. | VTR MODE | | | | CAMERA MODE | |
|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | PB | STAND BY | REC |
| T.REEL FG | I | IC505 (60) | – | *1 | *1 | *1 | – | *1 |
| S.REEL FG | I | IC505 (59) | – | *1 | *1 | *1 | – | *1 |
| ATF ERROR | I | IC505 (58) | – | *2 | *2 | *2 | *2 | *2 |
| DRUM PG | I | IC505 (66) | – | *3 | *3 | *3 | *3 | *3 |
| DRUM FG | I | IC505 (67) | – | *4 | *4 | *4 | *4 | *4 |
| CAP FG/CFG HMS | I | IC505 (68), (75) | – | *5 | *5 | *5 | *5 | *5 |
| CAP ON | O | IC505 (99) | L | H | H | H | L | H |
| REF PILOT | O | IC505 (83) | *7 | *6 | *6 | *6 | *6 | *6 |
| RP PB MODE | O | IC505 ① | H | H | H | H | H | L |
| DRUM RVS *9 | O | IC505 ㉝ | H | H | H | H | H | H |
| CAP FWD/$\overline{\text{RVS}}$ | O | IC505 (100) | L | H | L | H | L | H |
| DRUM PWM | O | IC505 (74) | L | *8 | *8 | *8 | *8 | *8 |
| CAP PWM | O | IC505 (73) | L | *8 | *8 | *8 | L | *8 |
| $\overline{\text{LM LIM CONT}}$ *10 | O | IC505 ㉛ | L | L | L | L | L | L |
| DRUM ON *11 | O | IC505 ㉜ | L | H | H | H | H | H |
| DRUM ACC | O | IC505 (89) | L | L | L | L | L | L |
| DRUM BRK | O | IC505 (90) | L | L | L | L | L | L |

*1. Inputting waveform.
*2. ATF error voltage input.
*3. One PG pulse input.
*4. FG pulses input.
*5. FG pulses input.
*6. Four frequencies.
*7. f1 (102.54 kHz) or f3 (165.21 kHz) output
*8. PWM signal.
*9. Normally "H".
Temporary "L" when load (drum reverse rotation).
*10. Temporary "H" when cassette loading
(finger catch protection).
*11. "H": approx. 1.3 Vdc.

## 1-2. CAMERA SYSTEM ADJUSTMENT

### 1. Power Supply Voltage Check (DD board)

| Subject | Option |
|---|---|
| Measuring instrument | Digital voltmeter |
| D5V check | |
| Measurement point | Pins ㉙ of CN901 |
| Specified value | 4.9 ± 0.1 Vdc |
| D3.6V check | |
| Measurement point | Pins ㉑ and ㉒ of CN901 |
| Specified value | 3.6 ± 0.1 Vdc |
| CAM 5V check | |
| Measurement point | Pins ㉕ and ㉖ of CN901 |
| Specified value | 4.85 ± 0.1 Vdc |
| CAM 15V check | |
| Measurement point | Pin ㉗ of CN901 |
| Specified value | 15 ± 0.3 Vdc |
| CAM –9V check | |
| Measurement point | Pin ㉛ of CN901 |
| Specified value | $-8.5^{+0.25}_{-0.4}$ Vdc |

Checking method:

1) Check that each power supply voltage satisfies the specified value.

### 2. Page F Data Initialization

**Note:** It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Page: 6, address: 00, data: 01
2) Check that the data of page: 6, address: 11 is 00.
3) Set data: 2D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 6, address: 11 is 01.
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote commander.
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

### 3. Page F Data Modification 1

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

**Note 1:** When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote commander every time the new data is set.

**Note 2:** When changing address: 00, set the data of page: 6, address: 00 to 80.

CCD-TR42/TR70/TR72/TR80/TR430

| Address | Data |
|---|---|
| 00 | 5C [5E] |
| 01 | 0A |
| 03 | 00 |
| 25 | A5 |
| 27 | 3A |
| 28 | A2 |
| 2A | 0C |
| 2B | 58 |
| 〈2D〉 | 〈04〉 |
| 2E | 17 |
| 2F | 22 |
| 30 | 08 |
| 32 | 50 |
| 34 | 00 |
| 35 | 30 |
| 3B | 20 |
| 3D | 03 |
| 50 | 05 |
| 54 | 66 |
| 57 | 66 |
| 58 | 59 |
| 5E | 1E |
| 60 | 3A |
| 77 | E0 |
| [90] | [11] |
| 9C | 91 |
| A4 | 02 |
| BD | 70 |
| BE | 35 |
| BF | 54 |

[ ] : CCD-TR70 only

〈 〉 : CCD-TR430 only

CCD-TR82/TR550

| Address | Data |
|---|---|
| 00 | 5A |
| 20 | 79 |
| 21 | 79 |
| 27 | 3A |
| 28 | A2 |
| 2B | 50 |
| [2D] | [04] |
| 2F | 27 |
| 30 | 08 |
| 32 | 47 |
| 3B | 20 |
| 3D | 02 |
| 50 | 32 |
| 77 | E0 |
| 9C | 91 |
| A4 | 02 |
| B1 | 25 |
| B3 | 25 |
| B4 | A2 |
| BD | 6E |
| BE | 32 |
| BF | 54 |

[ ] : CCD-TR550 only

CCD-TR400/TR750

| Address | Data |
|---|---|
| 00 | 56 |
| 20 | 79 |
| 21 | 79 |
| 27 | 3A |
| 28 | A2 |
| 2B | 50 |
| [2D] | [04] |
| 2F | 29 |
| 30 | 08 |
| 32 | 48 |
| 3B | 20 |
| 3D | 02 |
| 50 | 32 |
| 77 | E0 |
| 9C | 91 |
| A4 | 02 |
| B1 | 25 |
| B3 | 25 |
| B4 | A2 |
| BD | 6E |
| BE | 32 |
| BF | 54 |

[ ] : CCD-TR750 only

#### [Distinguishing the Camera Micro Computer (IC602) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 10.

| Version | Part Name | Page: 6 Address: 10 |
|---|---|---|
| Ver.1.0 | SC424608 | 10 |

#### [Distinguishing the Steady Shot Control Micro Computer (IC777) Versions] (CCD-TR82/TR400/TR550/TR750)

Each version can be distinguished by looking at the part name of the steady shot control micro processor or the data of page: 6, address: 30.

| Version | Part Name | Page: 6 Address: 30 |
|---|---|---|
| Ver.1.0 | CXP87132-010R | 01 |

## 4. Page F Data Modification 2 (CCD-TR82/TR550)

Change the data of page: F, address: 2B according to the type of IC used for the camera core (IC609).

Changing Method:

1) Page: 6, address: 00, data: 01
2) Set data: 16 to page: 6, address: 02.
3) Select page: A.
4) Read the data displayed on the adjusting remote commander (4 digits) and take the second number as X.
5) When X is 2, set 53 to page: F, address: 2B. When X is 6, set 50.
6) Press the PAUSE button of the adjusting remote commander.

## 5. Page E Data Write (CCD-TR42/TR70/TR72/TR80/TR430)

| | |
|---|---|
| Adjustment Page | E |
| Adjustment Address | 00 to 10 |

Writing method:

1) Page: 6, address: 00, data: 80
2) Select page E, and input the data shown in Table 7-1-5. to each address.
   (After setting the data, be sure to press the PAUSE button of the adjusting remote commander before changing the address.)
3) Set data: 00 to page: 6, address: 00.

| Address | Data |
|---|---|
| 00 | 00 |
| 01 | 0F |
| 02 | 30 |
| 03 | 65 |
| 04 | 2B |
| 05 | 00 |
| 06 | 00 |
| 07 | 00 |
| 08 | C3 |
| 09 | 0C |
| 0A | 00 |
| 0B | 7E |
| 0C | 65 |
| 0D | 2E |
| 0E | 62 |
| 0F | EC |
| 10 | 00 |

Table. 7-1-5.

## 6. 28 MHz Original Oscillation Adjustment (VC board)

Adjust the 28 MHz oscillation of the synchronization clock.
If the oscillation is not 28 MHz, the period will be inaccurate or the image will not be in color.

| | |
|---|---|
| Subject | Not required |
| Measurement Point | TP709 (CL) |
| Measuring Instrument | Frequency counter |
| Adjusting Element | CT701 |
| Specified Value | 14318181 ± 71 Hz |

Adjusting method:

1) Use CT701 to adjust the oscillation frequency to 14318181 ± 71 Hz.

## 7. V SUB Adjustment

Set the CCD imager V SUB voltage to the voltage specified for the imager.

| | |
|---|---|
| Subject | Not required |
| Adjustment Page | F |
| Adjustment Address | 04 |

Adjusting Method:

1) Read the V SUB voltage code of the CCD imager.
   Obtain the corresponding V SUB data from the following table.
2) Page: 6, address: 00, data: 01
3) Set the V SUB data to page: F, address: 04.
4) Press the PAUSE button of the adjusting remote commander.

| V SUB | | | V SUB | | |
|---|---|---|---|---|---|
| Voltage Code | Data | Voltagee (Vdc) *1 | Voltage Code | Data | Voltagee (Vdc) *1 |
| e | 6F | 9.0 | g | AD | 14.0 |
| f | 75 | 9.5 | r | B3 | 14.5 |
| g | 7B | 10.0 | s | B9 | 15.0 |
| h | 82 | 10.5 | t | C0 | 15.5 |
| j | 88 | 11.0 | u | C6 | 16.0 |
| k | 8E | 11.5 | v | CC | 16.5 |
| l | 94 | 12.0 | w | D2 | 17.0 |
| m | 9A | 12.5 | x | D8 | 17.5 |
| n | A1 | 13.0 | y | DF | 18.0 |
| p | A7 | 13.5 | z | E5 | 18.5 |

*1: The V SUB voltages (TP703) given are reference values.

## 8. VRG Adjustment

Set the CCD imager V RG voltage to the voltage specified for the imager.

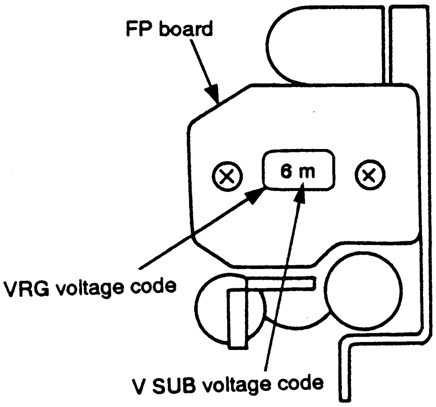
| | |
|---|---|
| Subject | Not required |
| Adjustment Page | F |
| Adjustment Address | 05 (V PGH) |

Adjusting Method:

1) Read the VRG voltage code of the CCD imager.
   Obtain the corresponding VRG data from the following table.
2) Page: 6, address: 00, data: 01
3) Set the VRG data to page: F, address: 05.
4) Press the PAUSE button of the adjusting remote commander.

| VRG | | |
|---|---|---|
| **Voltage Code** | **Data** | **Voltage (Vdc) *2** |
| 1 | 33 | 1.0 |
| 2 | 4E | 1.5 |
| 3 | 69 | 2.0 |
| 4 | 84 | 2.5 |
| 5 | 9F | 3.0 |
| 6 | BA | 3.5 |
| 7 | D5 | 4.0 |

*2: The VRG voltages (TP707) given are reference values.



**(Example)** When “6m” is displayed:
The V SUB voltage code is “m” and therefore the V SUB data will be “9A”.
The VRG voltage code is “6” and therefore the VRG data will be “BA”.

Fig. 7-1-7.

## 9. Flange Back Adjustment

The flange back adjustment for the inner focus lens is performed automatically.

| | |
|---|---|
| Subject | Chart for flange back adjustment<br>(2000 ± 5 mm from the front side of the lens<br>Luminance: 300 ± 50 lux) |
| Measurement Point | Check the operations on the TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 16, 17, 18, 19, 1A, 1B |

Adjusting method:

1) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
2) Page: 6, address: 00, data: 01
3) Check that the data of page: 6, address: 21 is 00.
4) Check that the page: F, address: 16 to 1B data is at the initial value. (Refer to Table 7-1-4. “Page F address list”)
5) Set data: 13 to page: 6, address: 01 and press the PAUSE button of the adjusting remote commander.
6) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data is automatically input to page: F, addresses: 16 to 1B.)
7) Check that the data of page: 6, address: 21 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Turn off the main power supply (6.3V).

## 10. Flange Back Check

| | |
|---|---|
| Subject | Siemens star<br>(2m from the front of the lens) |
| Measurement Point | DDS display of EVF or TV monitor |
| Measuring Instrument | |
| Specified Value | Focused at the TELE end and WIDE end. |

Checking method:

1) Place the Siemens star 2m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Shoot the siemens star with the zoom TELE end.
4) Turn ON the auto focus.
5) When the lens is focused, turn OFF the auto focus. (Note 2)
6) Shoot the siemens star with the zoom WIDE end.
7) Check that the lens is focused.

**Note 1:** Input the following data for CCD-TR82/TR400/TR550/TR750.
  1) Set data: 02 to page: 6, address: 32.
  2) Set data: 01 to page: 6, address: 33.

**Note 2:** When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page A of the adjusting remote commander.
  1) Set data: 0C to page: 6, address: 02.
  2) Page A shows the state of the focus.

$$A : 00 : \underline{XX} \rightarrow \left( \begin{array}{ll} \text{Odd:} & \text{Focused} \\ \text{Even:} & \text{Unfocused} \end{array} \right.$$

Processing after compleating adjustments
1) Set data: 00 to page: 6, address: 02.

For CCD-TR82/TR400/TR550/TR750
2) Set data: 00 to page: 6, address: 32.
3) Set data: 00 to page: 6, address: 33.

## 11. HALL Adjustment

To eliminate the differences in the outputs of the hall element attached to the iris for detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

| | |
|---|---|
| Subject | Not required |
| Measurement Point | DDS display of EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 06, 07 |
| Specified Value | 32 to 36 during IRIS OPEN<br>B4 to B8 during IRIS CLOSE |

Adjusting method:

1) Page: 6, address: 00, data: 01
2) Page: 1, address: 00, data: 01
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 6, address: 02.
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 80 to page: F, address: 07, and press the PAUSE button of the adjusting remote commander.
7) Set data: 40 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to $W_2$.
9) Set data: 30 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
10) Read the DDS display data, and set to $W_1$.
11) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data, and set to $K_1$.
13) Set data: 40 to page: F, address: 06, and press the PAUSE button.
14) Read the DDS display data, and set to $K_2$.
15) Convert $W_1$, $W_2$, $K_1$, $K_2$ to decimal notation, and obtain $W_1'$, $W_2'$, $K_1'$, $K_2'$. (Refer to Table 7-1-5. "Hexadecimal notation-decimal notation conversion table".)
16) Calculate $X_1'$ using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \cdots\cdots\cdots\cdots \text{Equation 1}$$

$$B' = W_1' - K_1' \cdots\cdots\cdots\cdots \text{Equation 2}$$

$$X1' = \frac{2080 + (48 \times A') - (16 \times B')}{A'} \cdots\cdots\cdots\cdots \text{Equation 3}$$

17) Convert $X_1'$ to hexadecimal notation, and obtain $X_1$. (Round off to one decimal place)
18) Set data: $X_1$ to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
19) Change the data of page: F, address: 07, and adjust the DDS display data to "34".
20) Press the PAUSE button of the adjusting remote commander.
21) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
22) Read the DDS display data, and set to $W_0$. If $W_0$ lies within the "B4" to "B8" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
23) Convert $W_0$ to hexadecimal notation, and obtain $W_0'$.
24) Calculate $X_2'$ using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 52 \cdots\cdots\cdots\cdots \text{Equation 4}$$

$$X_2' = \frac{(130 - B') \times (X_1' - 48) + 48 \times C'}{C'} \cdots\cdots\cdots \text{Equation 5}$$

($X_1'$ and $B'$ are values obtained from equations 2 and3)
25) Convert $X_2'$ to hexadecimal notation and obtain $X_2$. (Round off to one decimal place)
26) Set data $X_2$ to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
27) Change the data of page: F, address: 07, and adjust the DDS display data to "B6".
28) Press the PAUSE button of the adjusting remote commander.
29) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
30) Check that the DDS display data lies within the "32" to "36" range.

Processing after Completing Adjustments
1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Page D protect mode setting.
Page: 1, address: 00, data: 00

## 12. SYNC Level Check (VC board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | TP607 |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=140 ± 10 mV |

Adjusting method:
1) Page: 6, address: 00, data: 01
2) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Check that the SYNC level (A) satisfies the specified value.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

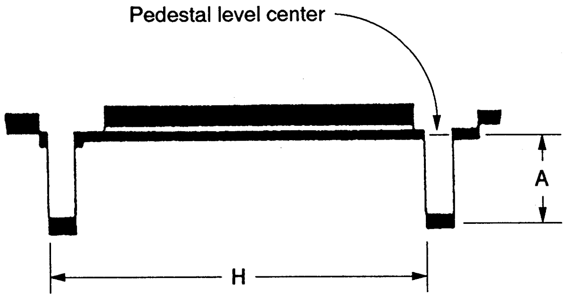


Fig. 7-1-8.

## 13. BURST Level Check (VC board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | TP609 |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=140 ± 15 mVp-p |

Adjusting method:
1) Page: 6, address: 00, data: 01
2) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Check that the Burst level (A) satisfies the specified value.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

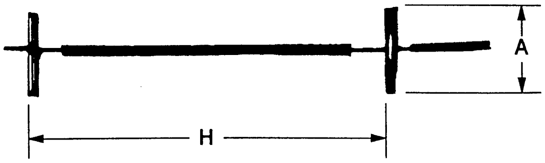


Fig. 7-1-9.

## 14. Picture Frame Setting

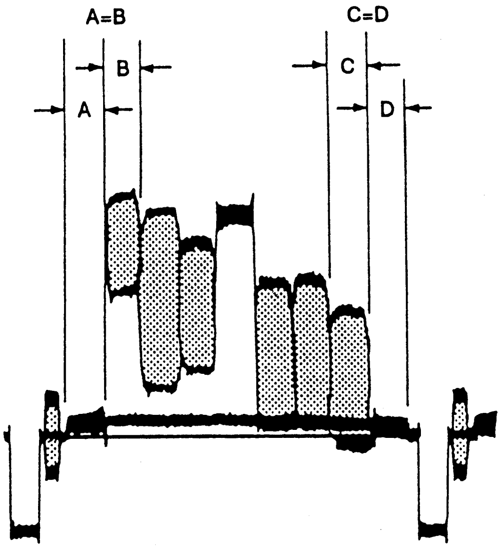
| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Oscilloscope and TV monitor. |
| Specified Value | A=B, C=D, t=0 ± 0.1 msec |

Setting method:

1) Turn the auto focus off.
2) Adjust the focus.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color. bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

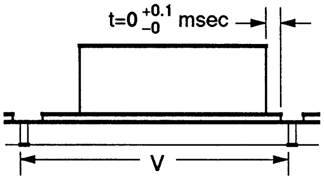

t=0 $^{+0.1}_{-0}$ msec
V

Fig. 7-1-10.

Check on the TV monitor

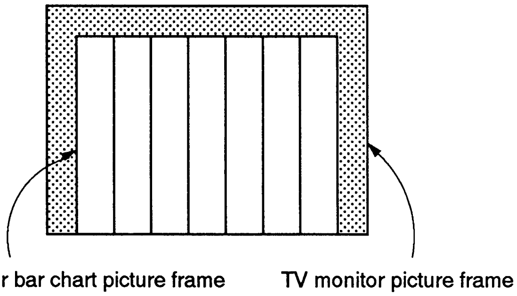

Color bar chart picture frame
TV monitor picture frame

Fig. 7-1-11.

## 15. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 08 (RED MATRIX),<br>09 (BLUE MATRIX),<br>0A (B-Y HUE), 0B (R-Y HUE) |
| Specified Value | All color luminance points should settle within each color reproduction frame. |

Adjusting method:

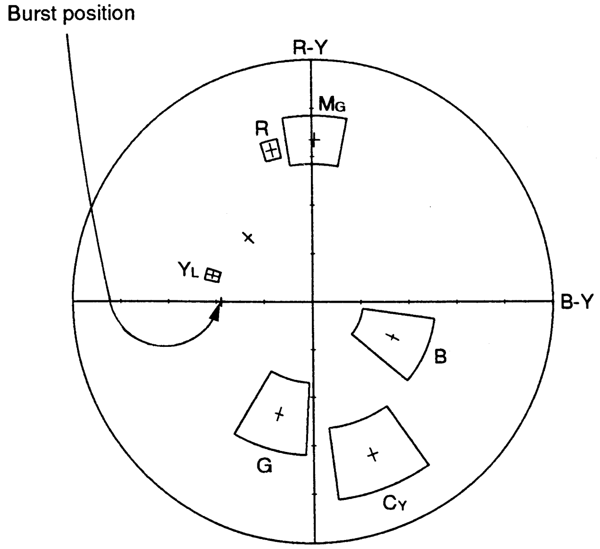
1) Page: 6, address: 00, data: 01
2) Set data: 00 to page: 6, address: 03.
3) Set data: F1 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of addresses 08, 09, 0A and 0B of page: F, and settle each color luminance point in each color reproduction frame.

   **Note 1:** Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses.
   If not, the new data will not be written to the memory.
6) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10 and press the PAUSE button of the adjusting remote commander.
2) Set data: 10 to page: 6, address: 03.

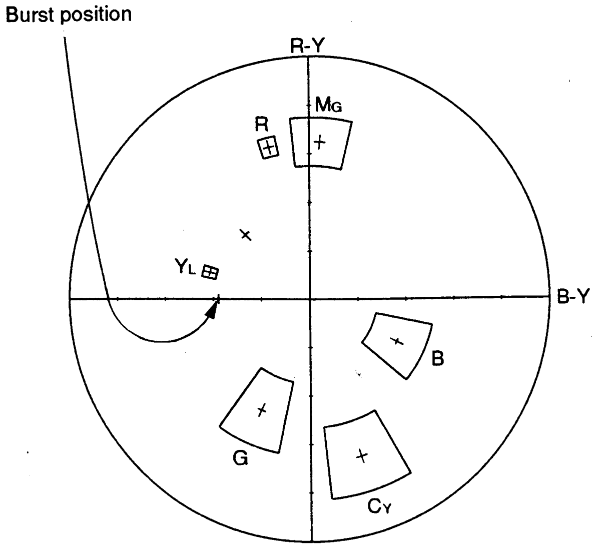
For CCD-TR42/TR70/TR72/TR80



Burst position
R-Y
MG
R
YL
B-Y
B
G
CY

Fig. 7-1-12.

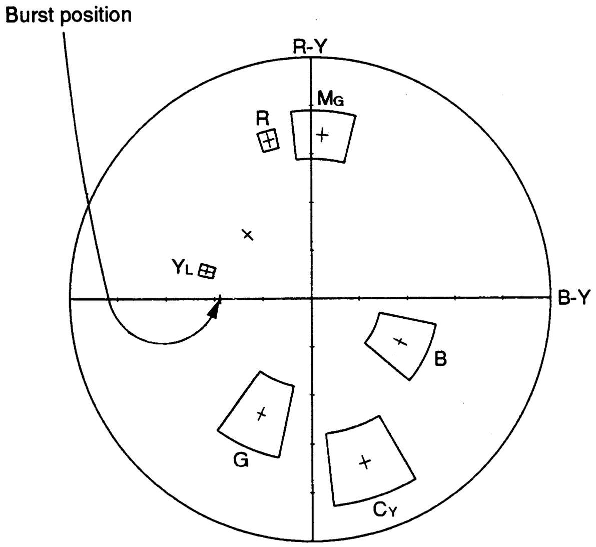
For CCD-TR82/TR550



Burst position
R-Y
MG
R
YL
B-Y
B
G
CY

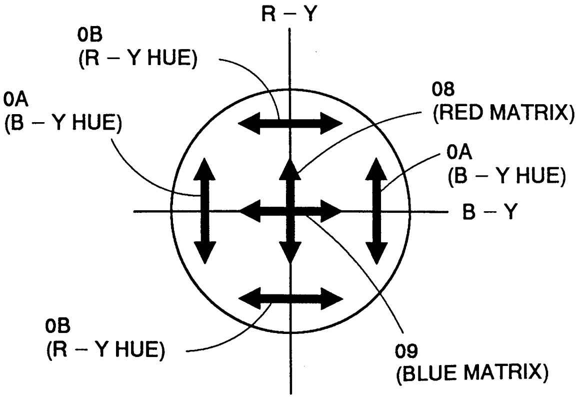
Fig. 7-1-13.

For CCD-TR400/TR750



Burst position
R-Y
MG
R
YL
B-Y
B
G
CY

Fig. 7-1-14.



R – Y
0B
(R – Y HUE)
0A
(B – Y HUE)
08
(RED MATRIX)
0A
(B – Y HUE)
B – Y
0B
(R – Y HUE)
09
(BLUE MATRIX)

Fig. 7-1-15. Direction of the Movements of the Adjustment Address and Luminance Point

### 16. IRIS IN/OUT Adjustment (VC board)

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

| Subject | White pattern |
|---|---|
| Measurement Point | DDS display of EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 13, 14 |

Adjusting method:

1) Page: 6, address: 00, data: 01
2) Release the page D protect.
   Page: 1, address: 00, data: 01
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0E to page: 6, address: 02.
5) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as $D_1$ and the lower two as $D_2$.
7) Convert $D_1$ to a decimal number and obtain $D_1'$. (Refer to Table 7-1-4. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate $D_3'$ using the following equations. (Equations 1 and 2 are for decimal notation calculation)
   When $D_2$ ≧ D0
   $D_3'=D_1'-21$ ································Equation 1
   When $D_2$ < D0
   $D_3'=D_1'-22$ ································Equation 2
9) Convert $D_3'$ to a hexadecimal number and obtain $D_3$.
10) Set $D_3$ to page: F, address: 13, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
    (IND0.5 SHUTTER mode setting)
12) Read the DDS display data (Note 1), and take the upper two digits as $D_4$ and the lower two as $D_5$.
13) Convert $D_4$ to a decimal number and obtain $D_4'$. (Refer to Table 7-1-4. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate $D_6'$ using the following equations. (Equations 3 and 4 are for decimal notation calculation)
    When $D_5$ ≧ F0
    $D_6'=D_4'-13$ ·····································Equation 3
    When $D_5$ < F0
    $D_6'=D_4'-14$ ·····································Equation 4
15) Convert $D_6'$ to a hexadecimal number and obtain $D_6$.
16) Set $D_6$ to page: F, address: 14, and press the PAUSE button of the adjusting remote commander.

**Note 1:** The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 00, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.

## 17. MAX GAIN Adjustment (VC board)

Correct the differences in the minimum illuminance.
If the illuminance is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Measurement Point | TP607 (CAM Y) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 15 |
| Specified Value | CCD-TR42/TR70/TR72/TR80/TR430<br>A=275 ± 10 mV<br>CCD-TR82/TR550<br>A=195 ± 10 mV<br>CCD-TR400/TR750<br>A=210 ± 10 mV |

Adjusting method:

1) Page: 6, address: 00, data: 01
2) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 15, and adjust so that the Y OUT signal level (A) becomes the specified value.
   **Note:** The data of address: 15 should be 70 to FF.
4) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

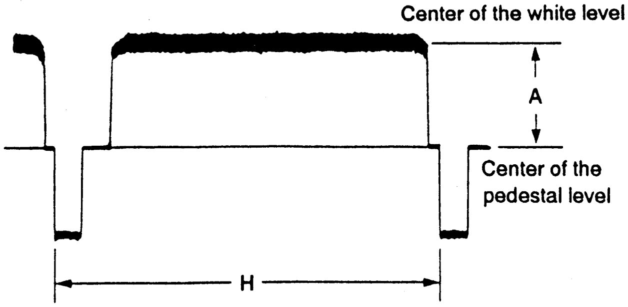


Fig. 7-1-16.

## 18. Auto White Balance Standard Data Input

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Adjustment Page | F |
| Adjustment Address | 0C, 0D, 0E, 0F |

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Page: 6, address: 00, data: 01
3) Check that the data of page: 6, address: 11 is 00.
4) Wait for 2 seconds.
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
7) Check that the data of page: 6, address: 11 is 01.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

## 19. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

| Subject | White pattern standard picture frame |
|---|---|
| Filter | Filter C14 for color temperature correction |
| Measurement Point | Check with the DDS display on the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 11 (NORM R)<br>12 (NORM B) |
| Specified Value | CCD-TR42/TR70/TR72/TR80/<br>TR400/TR530/TR750<br>R ratio: 2A40 to 2AC0<br>B ratio: 5E00 to 5F00<br>CCD-TR82/TR550<br>R ratio: 2B40 to 2BC0<br>B ratio: 5E00 to 5F00 |

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Page: 1, address: 00, data: 01
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Page: 6, address: 00, data: 01
5) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: 04 to page: 6, address: 02.
7) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: 05 to page: 6, address: 02.
10) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Page D protect mode setting.
   Page: 1, address: 00, data: 00

## 20. White Balance Check

| Subject | White pattern standard picture frame |
|---|---|
| Filter | Filter C14 for color temperature correction<br>ND filter 1.0 and 0.3 |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Specified Value | Fig. 7-1-17. A to C |

Checking method:

1) Check that the lens is not covered with either filter.
2) Page: 6, address: 00, data: 01
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-1-17.A.
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Place the C14 filter on the lens.
8) Check that the center of the white luminance point settles in the circle shown in Fig. 7-1-17. B.
9) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 7-1-17. C.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 00, and press the PAUSE button.

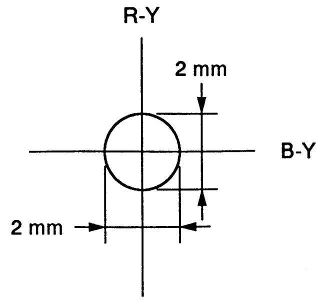

R-Y
2 mm
B-Y
2 mm

Fig. 7-1-17. A

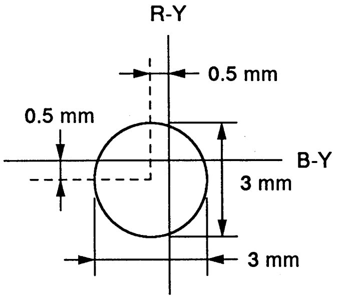

R-Y
0.5 mm
0.5 mm
B-Y
3 mm
3 mm

Fig. 7-1-17. B

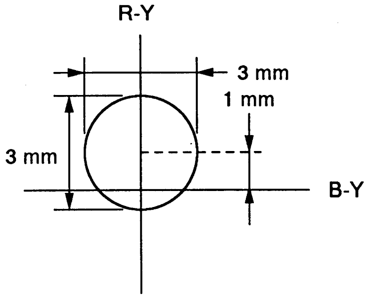

R-Y
3 mm
1 mm
3 mm
B-Y

Fig. 7-1-17. C

## 21. VIDEO OUT Level Check

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal (Terminated at 75 Ω ) |
| Measuring Instrument | Oscilloscope |
| Specified Value | Y level=660 ± 40 mV<br>SYNC level=285 ± 20 mV<br>BURST level=285 ± 20 mV |

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

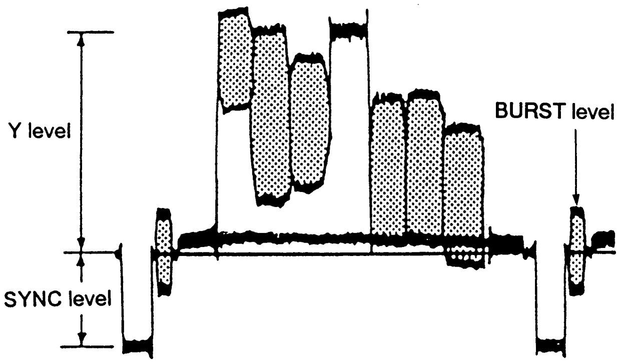


Fig. 7-1-18.

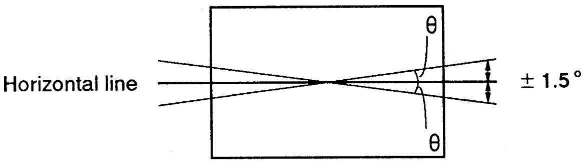
## 1-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS (CCD-TR42/TR72/TR82/TR400/TR430/TR550/TR750)

### 1-3-1. Horizontal Slant Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Specified Value | ± 1.5° |

Adjusting method:

1) Adjust RV904 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening screw.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 7-1-19.

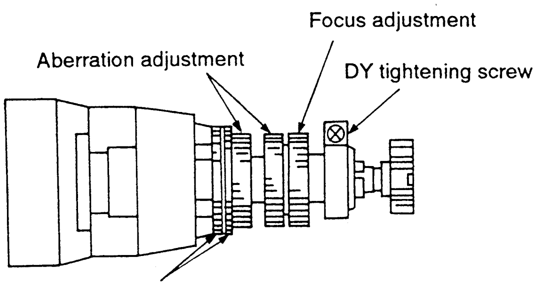


Fig. 7-1-20.

### 1-3-2. Centering Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Specified Value | ± 4% |

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-1-20.)

   **Note:** As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

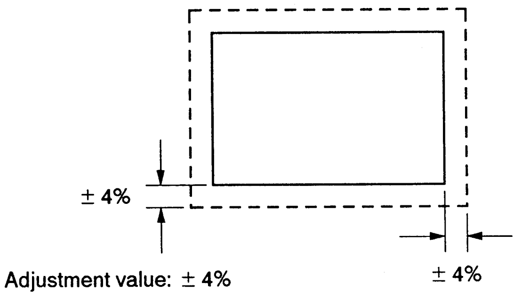


Fig. 7-1-21.

### 1-3-3. Focus Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus.
   (Refer to Fig. 7-1-20.)

### 1-3-4. Aberration Adjustment

| | |
|---|---|
| Model | E-E |
| Signal | Dot pattern |
| Specified Value | T < 2 • D, F < D |

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

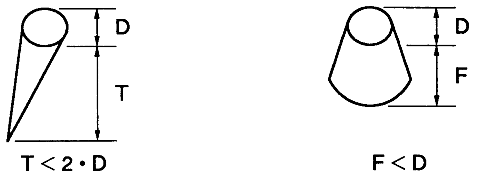


Fig. 7-1-22.

### 1-3-5. Horizontal Amplitude Adjustment (VF-65 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Adjusting Element | C909 |
| Specified Value | 6 ± 2% |

Adjusting method:

1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C909) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-1-24.)

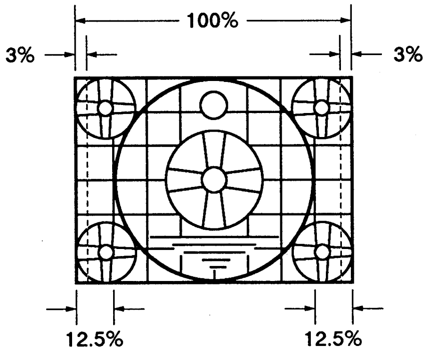
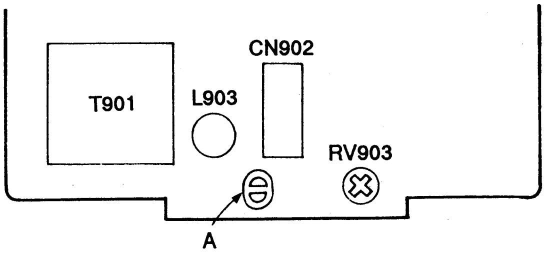


Fig. 7-1-23.



VF-65 board (Component side)

| Section A | Size H |
|---|---|
| Open | Small |
| Short | Big |

Fig. 7-1-24.

### 1-3-6. Vertical Amplitude Adjustment (VF-65 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations (WR5-5NSP)<br>Monoscope section |
| Adjusting Element | RV903 |
| Specified Value | 5 ± 2% |

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

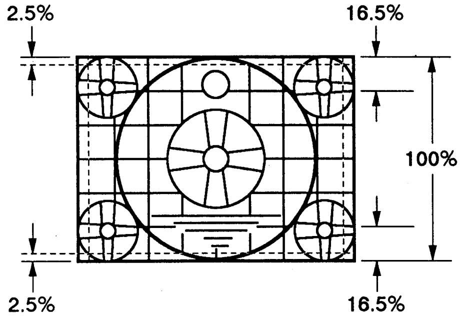


Fig. 7-1-25.

### 1-3-7. Brightness Adjustments (VF-65 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations (WR5-5NSP)<br>Monoscope section |
| Adjusting Element | RV904 |

Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

### 1-3-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-3-5. Horizontal Amplitude Adjustment" and "1-3-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [1-3-7. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "1-3-3. Focus Adjustment" and "1-3-4. Aberration Adjustment".

## 1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS (CCD-TR70/TR80)

**Note 1:** The backlight (fluorescent tube) is driven by a 800 Vp-p, 16 kHz AC power supply.
Therefore, be careful not to touch the backlight holder as you will receive an electric shock.

**Note 2:** When replacing the LCD unit, ensure there will be no damages by static electricity.

### [Adjusting connector]

Some measuring points for adjusting the view-finder are concentrated at CN902 of the VF-67 board. Connect the measuring equipments via the measuring pin tool. The following table lists the pin numbers and signal names of CN902.

| Pin No. | Signal Name | Pin No. | Signal Name |
|---|---|---|---|
| 1 | LC COM | 2 | EVF GND |
| 3 | G OUT | 4 | 13.5V |
| 5 | NC | 6 | 12V |
| 7 | R OUT | 8 | B OUT |
| 9 | NC | 10 | PCO |

Table 7-1-6.

### [Power Supply Voltage]

Adjust the power supply voltage for the battery pin so that Pin ⑦ (EVF UNREG) of CN851 of the VF-66 board becomes 6.0 ± 0.1 Vdc.

### [Video Input Signal for Adjusting]

If the signal column specifies "Color bar signal whose chroma signal and burst signal are turned off", input a color bar signal whose chroma signal and burst signal have been turned off to the video input pin as the video input signal for adjusting. Check that the signal level of Pin ⑪ of CN851 of the VF-66 board is 1.0 ± 0.12 Vp-p before adjusting.

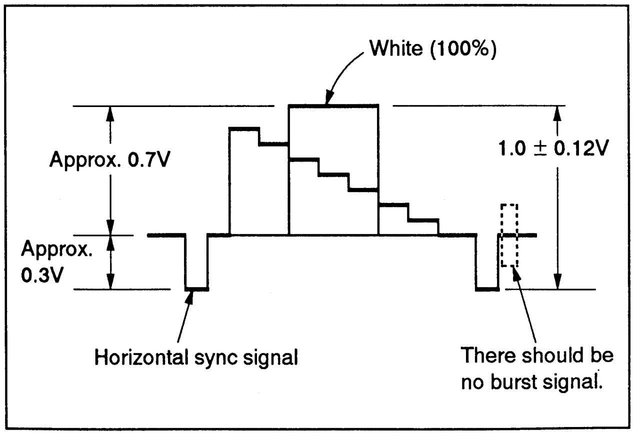


Fig. 7-1-26. Color bar signal whose chroma signal and burst signals are turned off

## 1. Current Consumption Adjustment (VF-66 board)

Adjust the luminance and color temperature of the back light.
If these are not correct, the image will be brighter or darker than normal.

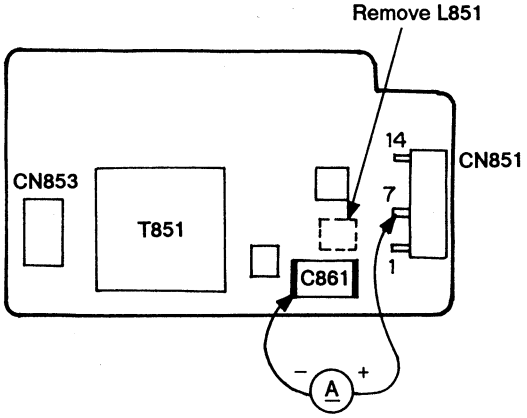
| | |
|---|---|
| Mode | Stop |
| Signal | Color bar signal whose chroma signal and burst signal are turned off |
| Measurement Point | Remove L851 and measure<br>+ : Pin ⑦ of CN851<br>– : ⊕ pin of C861 |
| Measuring Instrument | Ammeter |
| Adjustment Page | D |
| Adjustment Address | B7 |
| Specified Value | 55 ± 5 mA |

**Note 1:** Wait for 30 secs. after the power supply has been turned on before this adjustment.

**Note 2:** After adjusting, connect L851.

Adjusting method:

1) Check that the voltage of Pin ⑦ of CN851 is 6.0 ± 0.1 Vdc.
2) Page: 1, address: 00, data: 01
3) Change the data of page: D, address: B7, and adjust the current consumption to 55 ± 5 mA.
4) Press the PAUSE button of the adjusting remote commander.



VF-66 BOARD Component side

Fig. 7-1-27.

## 2. Power Supply Voltage Check (VF-67 board)

| | |
|---|---|
| Mode | Record |
| Measuring Instrument | Digital voltmeter |
| 13.5V check | |
| Measurement Point | Pin ⑭ of CN901 |
| Specified Value | 13.5 ± 0.3 Vdc |
| 12.0V check | |
| Measurement Point | Pin ⑬ of CN901 |
| Specified Value | 12.0 ± 0.3 Vdc |

## 3. EVR Initial Data Input

| | |
|---|---|
| Mode | STOP |
| Signal | Arbitary |
| Adjustment Page | D |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Select page D, and input the data in the following table.
   **Note:** To write in the nonvolatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time the data is set.

| Address | Data |
|---|---|
| B0 (BRIGHT) | A0 |
| B1 (COLOR) | AE |
| B2 (HUE) | 95 |
| B3 (SUB BRIGHT R) | 7A |
| B4 (SUB BRIGHT B) | 6A |
| B5 (CONTRAST) | 70 |
| B6 (VCO) | 90 |
| B7 (INVERTER CURRENT) | 35 |
| B8 (SUB CONTRAST R) | 7A |
| B9 (SUB CONTRAST B) | 7A |
| BA (GAMMA 1) | 70 |
| BB (GAMMA 2) | F0 |

## 4. VCO Adjustment (VF-67 board)

Set the free running frequency of the VCO.
If it is not correct, the image will waver.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar |
| Measurement Point | Pin ⑩ of CN902 (PCO) |
| Measuring Instrument | Oscilloscope (DC range) |
| Adjustment Page | D |
| Adjustment Address | B6 |
| Specified Value | A=2.8 ± 0.1V |

Adjusting method:

1) Check tha GND level of the oscilloscope.
2) Page: 1, address: 00, data: 01
3) Change the data of page: D, address: B6, and adjust the PCO voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

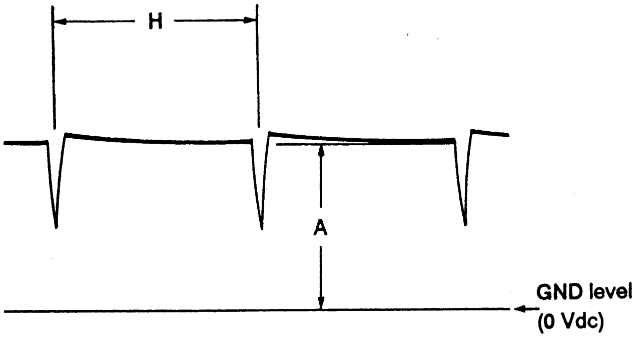


Fig. 7-1-28.

## 5. Bright Adjustment (VF-67 board)

Adjust to the proper LCD panel driving video signal level.
If it is not correct, the image will be saturated (whitish) or blackish.

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ③ of CN902 (G OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | B0 (BRIGHT) |
| Specified Value | A=7.0 ± 0.1V |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: B0, and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

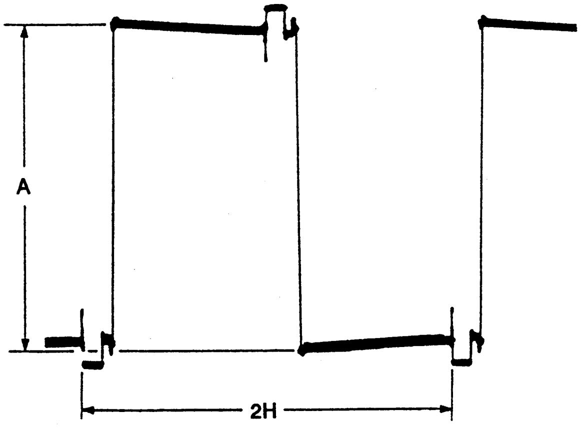


Fig. 7-1-29.

## 6. Contrast Adjustment (VF-67 board)

Set the contrast of the image.

If the contrast is not correct, the image will be blur (whitish) or saturated.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar signal whose chroma and burst signals are turned off |
| Measurement Point | Pin ③ of CN902 (G OUT) |
| Measuring Instrument | Oscilloscope<br>External trigger:<br>Pin ㉞ of IC902 (FRP) |
| Adjustment Page | D |
| Adjustment Address | B5 (CONTRAST) |
| Specified Value | A=2.0 ± 0.1V |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: B5, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

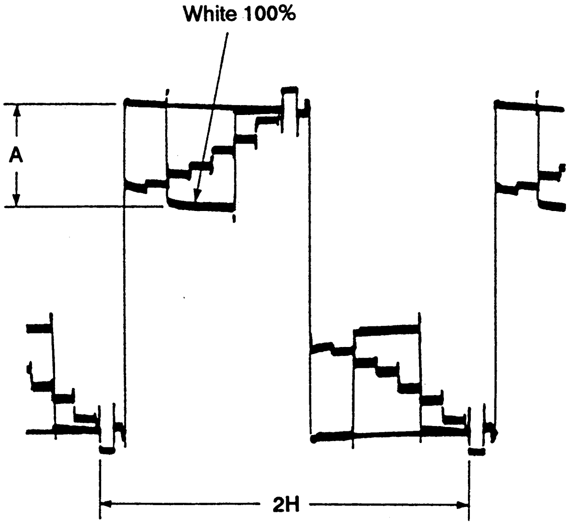


Fig. 7-1-30.

## 7. SUB BRIGHT R Preset Adjustment (1) (VF-67 board)

White balance rough adjustment (1)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑦ of CN902 (R OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | B3 (SUB BRIGHT R) |
| Specified Value | A=7.0 ± 0.1V |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: B3 and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

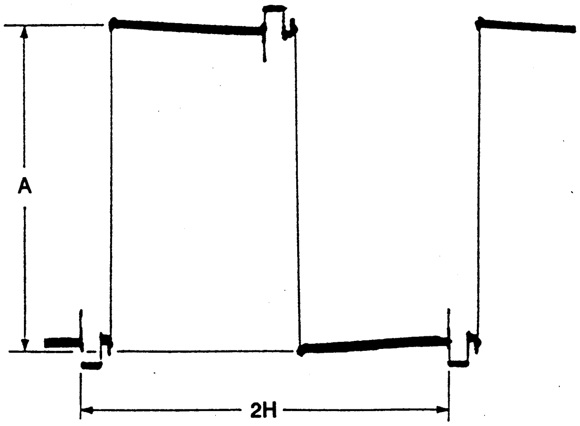


Fig. 7-1-31.

## 8. SUB BRIGHT B Preset Adjustment (2) (VF-67 board)

White balance rough adjustment (2)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑧ of CN902 (B OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | B4 (SUB BRIGHT B) |
| Specified Value | A=7.1 ± 0.1V |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: B4 and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

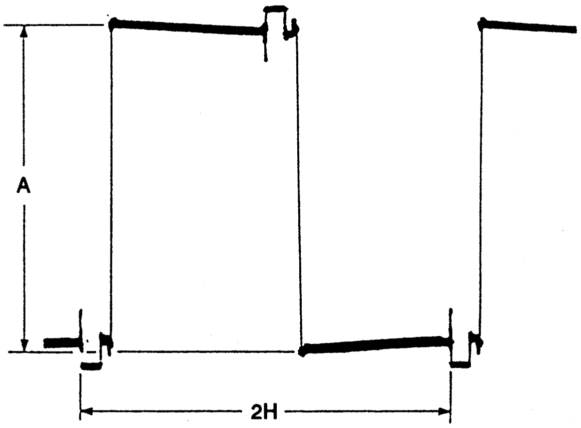


Fig. 7-1-32.

## 9. White Balance Adjustment

Adjust to the proper white balance level.

If it is not correct, the color reproducibility of the LCD panel will be poor.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar signal whose chroma and burst signals are turned off |
| Measurement Point | Check on the LCD display |
| Measuring Instrument | |
| Adjustment Page | D |
| Adjustment Address | B3 (SUB BRIGHT R),<br>B4 (SUB BRIGHT B) |
| Specified Value | The display should not be colored |

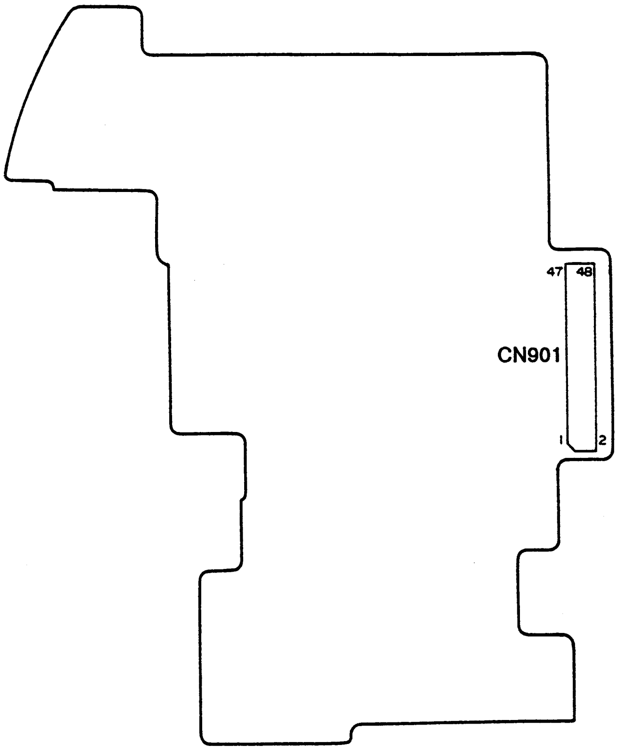
**Note:** Wait for more than 1 minute after the power supply has been turned on before this adjustment.

Adjusting method:

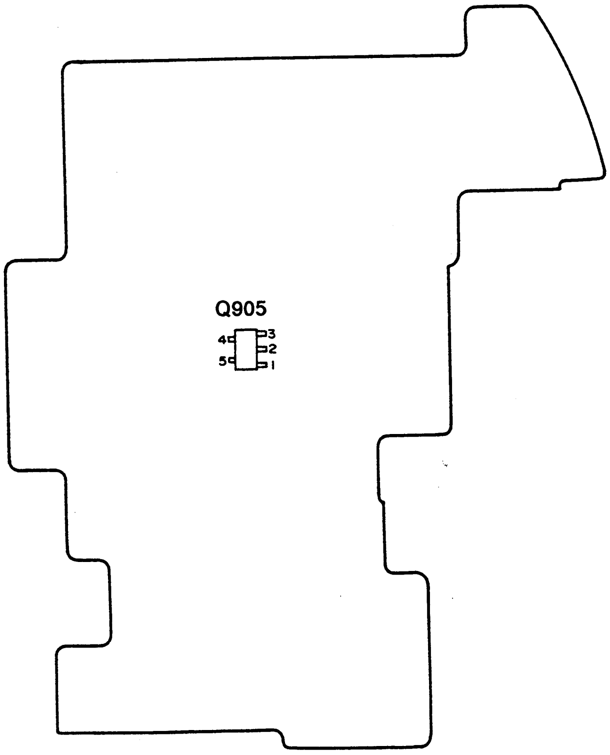
1) Page: 1, address: 00, data: 01
2) Check that the LCD display is not colored. If it is, change the data of address: B3 and address: B4 of page: D, and adjustment the display is not colored.
3) Press the PAUSE button of the adjusting remote commander.

## 1-5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

**DD BOARD (CONDUCTOR SIDE)**

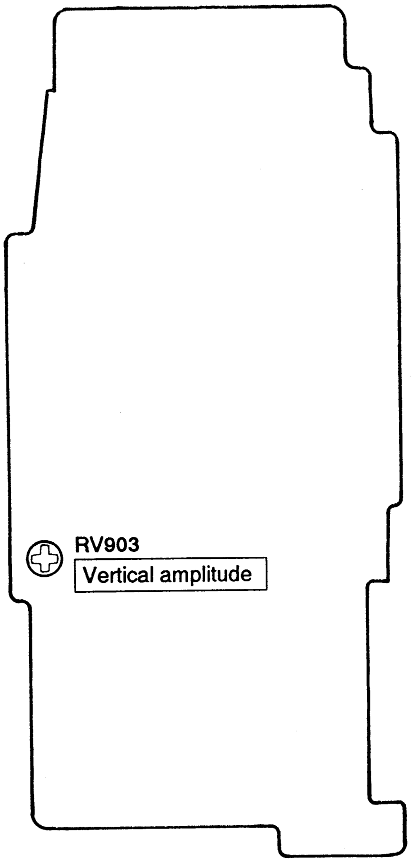

47
48
CN901
1
2

**DD BOARD (COMPONENT SIDE)**

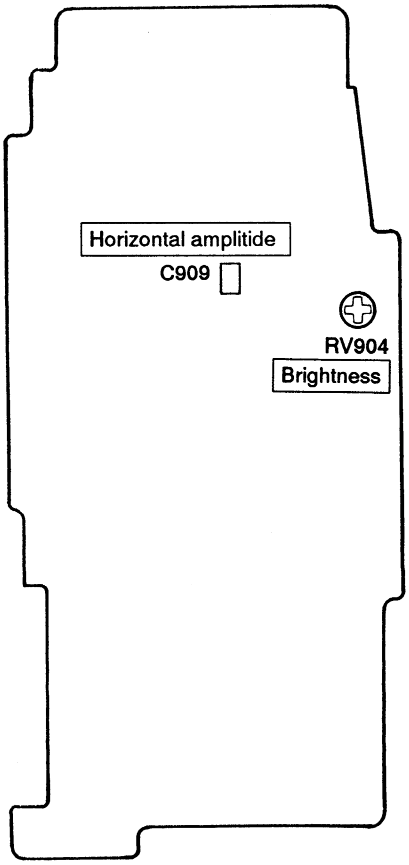


**CCD-TR42/TR72/TR82/TR400/TR430/TR550/TR750**

**VF-65 BOARD (COMPONENT SIDE)**

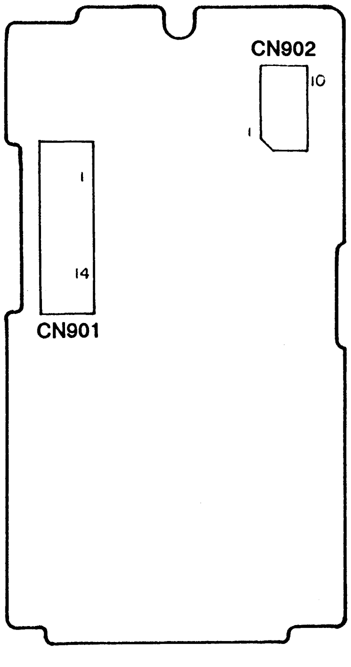

RV903
Vertical amplitude

**VF-65 BOARD (CONDUCTOR SIDE)**

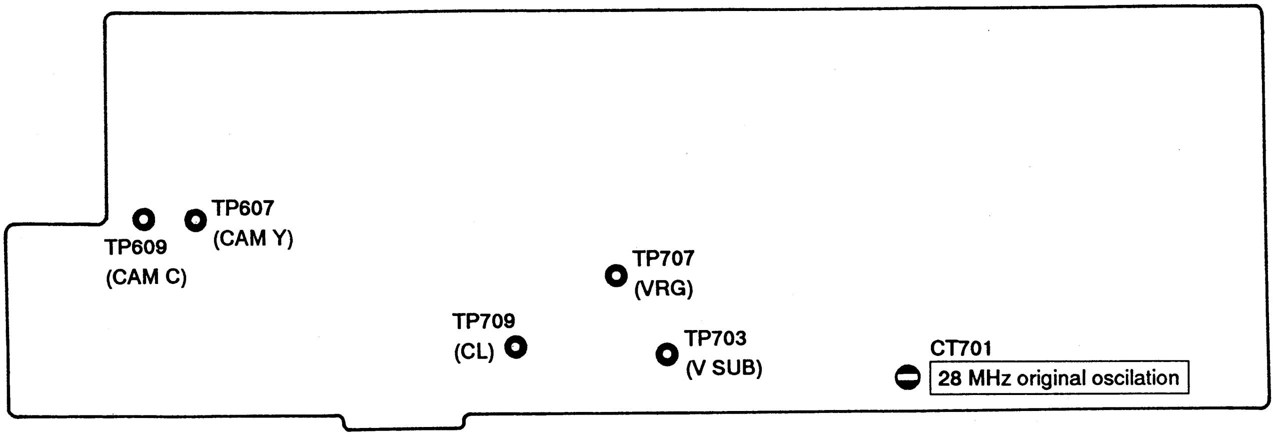

Horizontal amplitide
C909
RV904
Brightness

**CCD-TR70/TR80**

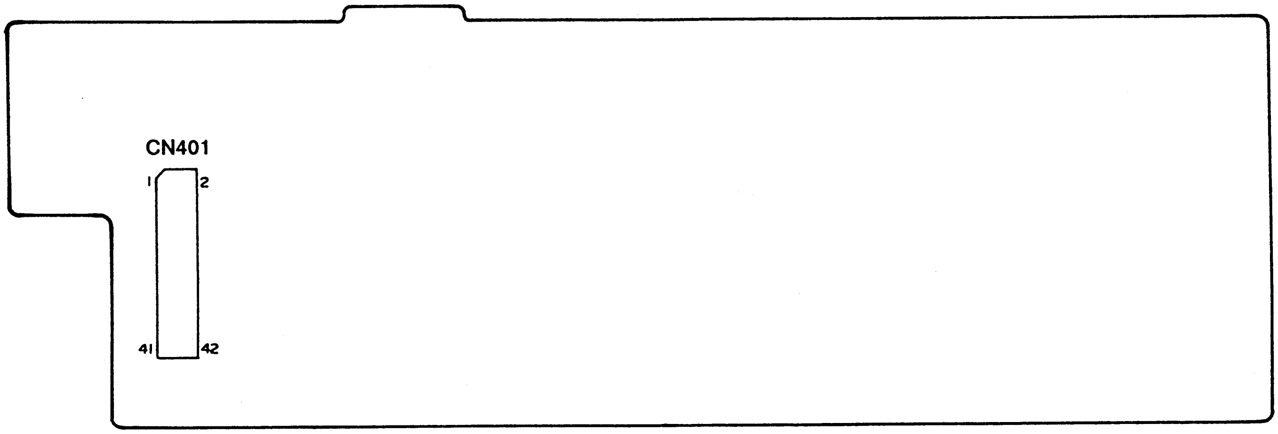
**VF-66 BOARD (COMPONENT SIDE)**


CN902
10
1
1
14
CN901

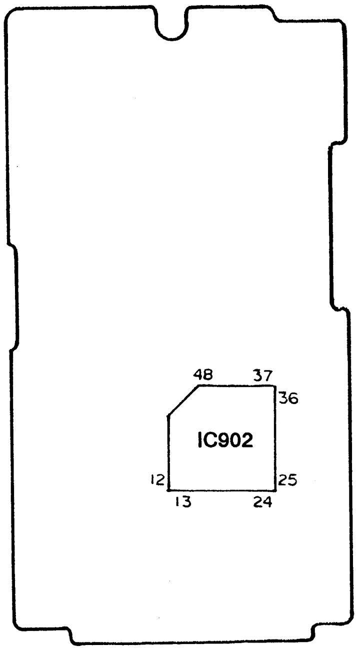
## VC BOARD (COMPONENT SIDE)


TP607
(CAM Y)
TP609
(CAM C)
TP707
(VRG)
TP709
(CL)
TP703
(V SUB)
CT701
28 MHz original oscilation

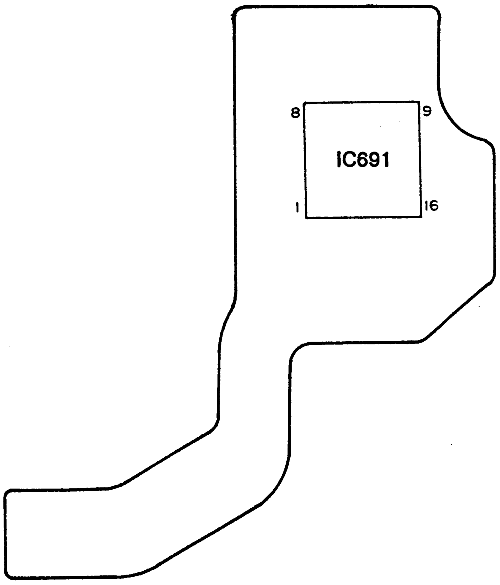
## VC BOARD (COMPONENT SIDE)


CN401
1
2
41
42

## VF-66 BOARD (CONDUCTOR SIDE)


48
37
36
IC902
12
25
13
24

## FP-89 BOARD


8
9
IC691
1
16

## 7-2. MECHANICAL SECTION ADJUSTMENTS

### Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual Ⅳ A Mechanism ".

### 2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
   (Release of the protect)
6) Set data: 01 to page: D, address: 02, and press the PAUSE button of the adjusting remote commander.
   (Emergency prohibition mode setting)
7) Set data: 04 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
   (Sensor ineffective mode setting)

By carrying out the above procedure, the unit can be operated without loading a cassette.
Be sure to carry out "Processing after Operations" after checking the operations.
Set the data of page: D, address: 03 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode·········06
Forced camera power supply ON mode······05

**[Processing after Operations]**

1) Set data: 01 to page: 1, address: 00.
   (Release of protect)
2) Set data: 00 to page D, address: 02, and press the PAUSE button of the adjusting remote commander.
   (Release of the emergency prohibition mode)
3) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
   (Release of the sensor ineffective mode)
4) Set data: 00 to page: 1, address: 00.
   (Protect setting)
5) Disconnect the power supply of the unit.

## 2-2. TAPE PATH ADJUSTMENT

### 1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
   (Release of the protect)
5) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote commander can be disconnected if its PAUSE button of remote commander is pressed. In this case, be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-Pin ③ of CN102 of VS board
   External trigger-Pin ④ of CN102 of VS board
   (Connect the oscilloscope via the measuring pin tool for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1NP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Manual IV (A Mechanism).
9) Perform "Processing after operations", after completing adjustments.

CN102 of VS board

| | |
|---|---|
| 1 | PB 'CH RF |
| 2 | PB PCM RF |
| 3 | PB RF |
| 4 | RF SWP |
| 5 | RP GND |
| 6 | REC 2 |

### [Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 02, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Remove the power supply from the unit.

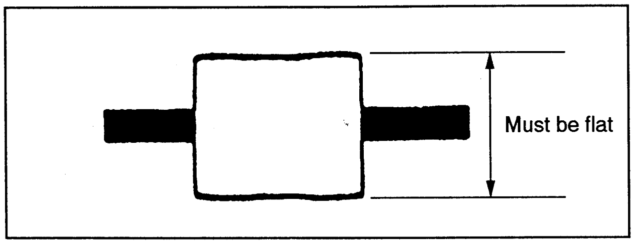


Fig. 7-2-1.

# 7-3. VIDEO SECTION ADJUSTMENTS

**When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 7–92.**

## 3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

### 3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For Hi8 mode video frequency characteristics adjustment (WR5-7NE)
      Part Code: 8-967-995-13
    - For checking normal mode operations
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Or (WR5-4NSP)
      Part Code: 8-967-995-41
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
12) remote commander for adjustment (J-6082-053-A)
13) VC board extension cord (42P, 0.8 mm)
    Part Code: J-6082-285-A
14) Control switch block (FK board)
    extension cord (9P, 0.8 mm)
    Part Code: J-6082-288-A
15) Control switch block (CK board)
    extension cord (18P, 0.8 mm)
    Part Code: J-6082-289-A
16) AU-165 board extension cord (34P, 0.8 mm)
    (CCD-TR72/TR80/TR400/TR430/TR750)
    Part Code: J-6082-286-A

### 3-1-2. Adjusting Precautions

1) The adjustment for this unit is performed using the VIDEO input (VIDEO terminal input). or the camera input. The camera input can be used for video adjustments only. Use the VIDEO input for the other adjustments.
   When using the VIDEO input, set the power supply switch to "PLAYER" or set the "forcible VTR power supply ON mode" using the adjusting remote commander. (Note 1).
   When using the camera input, set the power supply switch to "CAMERA" or set the "Forcible camera+VTR power supply ON mode" using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" (Note 3).
2) The F panel block (MA board) is not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN1301 of the AU board
3) The view finder (VF board) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN206 of the VS board (4P, 0.5 mm)
4) The cabinet (R) (CK board: Power supply switch, camera function switch) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" is set. In this case, disconnect the following connectors.
   1. CN503 of the VS board (18P, 0.8 mm)
   2. CN101 of the ZB board (4P, 0.8 mm)
   3. CN501 of the VS board (24P, 0.8 mm)
      (CCD-TR400/TR750)

   However, as disconnecting these connectors means disconnecting the 3V lithium power supply, data set by the user such as the date, time, and menu will be lost. After completing the adjustments, set these data again, and be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode". (Note 3)
   When connecting the cabinet (R) using the extension cord, use the following type.
   1. J-6080-289-A (18P, 0.8 mm)

5) The lens block and VC board are not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN203 of the VS board (42P, 0.8 mm)
   2. CN775 of the VC board (8P, 0.8 mm) (CCD-TR82/TR400/TR550/TR750)

   Connect the following when removing the VC board.
   1. Connect Pin ㉒ (REG H) and Pin ⑦ (D3.6V) of CN203 of the VS board with a jumper wire.

   When connecting the VC board using the extension cord, use the following type.
   1. J-6080-285-A (42P, 0.8 mm)

6) The audio board (AU board) is required only for audio adjustments. When not using it, disconnect the following connector.
   1. CN202 of the VS board

   When connecting the AU-165 board (CCD-TR72/TR80/TR400/TR430/TR750) using the extension cord, use the following type.
   1. J-6080-286-A (34P, 0.8 mm)

7) When opening the VS board, disconnect the following connectors.
   1. CN502 of the VS board (9P, 0.8 mm)

   The VTR function keys will not work. Use the remote commander to perform operations other than EJECT.
   When connecting the FK board and CN502 of VS board using the extension cord, use the following type.
   1. J-6080-288-A (9P, 0.8 mm)

**Note 1:** Setting the "forcible VTR power supply ON mode (VIDEO input mode)"
1) Set data: 01 to page: 1, address: 00.
   (Releasing the page D protect)
2) Set data: 02 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
   (Setting the forcible VTR power supply ON mode)

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

**Note 2:** Setting the "forcible camera+VTR power supply ON mode (camera input mode)"
1) Set data: 01 to page: 1, address: 00.
   (Releasing the page D protect)
2) Set data: 03 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
   (Setting the forcible camera+VTR power supply ON mode)

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

**Note 3:** Exiting the "forcible power supply ON mode"
1) Set data: 01 to page: 1, address: 00.
   (Releasing the page D protect)
2) Set data: 00 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
   (Setting the forcible power supply ON mode)
3) Set data: 00 to page: 1, address: 00.
   (Setting the page D protect)

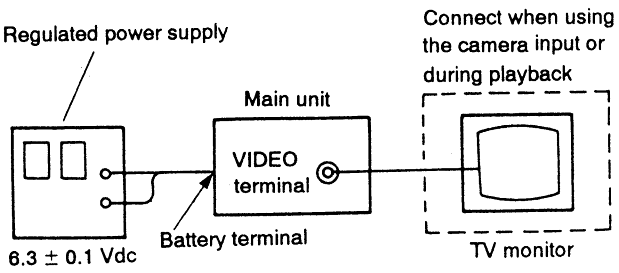
### 3-1-3. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 7-3-1. according to the input terminal specifications (VIDEO input or CAMERA input), and perform the adjustments.
The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications.

**Note 1:** If the VIDEO input is used for the adjustments which specify for the CAMERA input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

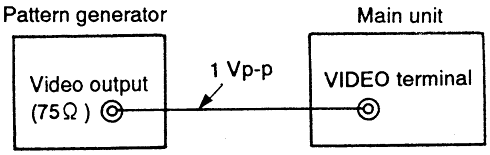
**Note 2:** When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by VTR. It is recommendet that a pattern generator with a Y/C separation output terminal be used as much as possible.

**Connecting the TV monitor and regulated power supply**


Regulated power supply
Connect when using the camera input or during playback
Main unit
VIDEO terminal
6.3 ± 0.1 Vdc
Battery terminal
TV monitor

**Connecting the pattern generator**

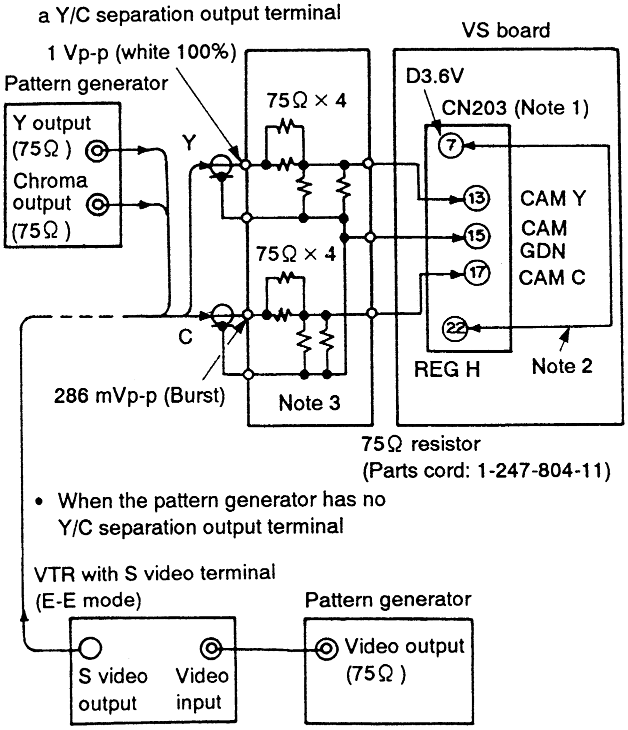
[VIDEO Input]
Set the power supply switch to "PLAYER" or set the "forcible VTR power supply ON mode" using the adjusting remote commander.


Pattern generator
Main unit
Video output (75Ω)
1 Vp-p
VIDEO terminal

**Note:** The TV monitor cannot be connected.
Use the view finder to monitor.

[CAMERA Input]
Set the power supply switch to "CAMERA" or set the "forcible camera+VTR power supply ON mode" using the adjusting remote commander.

- When the pattern generator has a Y/C separation output terminal


VS board
1 Vp-p (white 100%)
Pattern generator
Y output (75Ω)
Chroma output (75Ω)
Y
75Ω × 4
75Ω × 4
D3.6V
CN203 (Note 1)
⑦
⑬ CAM Y
⑮ CAM GDN
⑰ CAM C
㉒
REG H
Note 2
C
286 mVp-p (Burst)
Note 3
75Ω resistor
(Parts cord: 1-247-804-11)
VTR with S video terminal
(E-E mode)
Pattern generator
S video output
Video input
Video output (75Ω)

- When the pattern generator has no Y/C separation output terminal

**Note 1:** Remove the VC board.
**Note 2:** Connect Pins ⑦ and ㉒ of CN203 with the jumper wire.
**Note 3:** The chroma signal input is not required for some adjustments.

Fig. 7-3-1.

### 3-1-4. How to Set the REC Mode in the Model with out REC switch

1) REC key forbidden accept mode cancel
   1. Connect the adjusting remote commander to the remote terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 17, and set the data to 12 [13].$^{\text{Note 1}}$ (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2) REC mode setting
   1. Turn off the HOLD switch of the adjusting remote command-er.
   2. Press REC buttons of the adjusting remote commander.
   3. Perform "3. Procedure after completed the adjustment", after completing adjustment.

3) Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjusting remoter controller.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 17, and set the data to 02 [03].$^{\text{Note 1}}$ (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)
   7. Turn off the power.

**Note 1:** No mark : CCD-TR42/TR70/TR72/TR80/TR82
[ ] : CCD-TR430/TR550

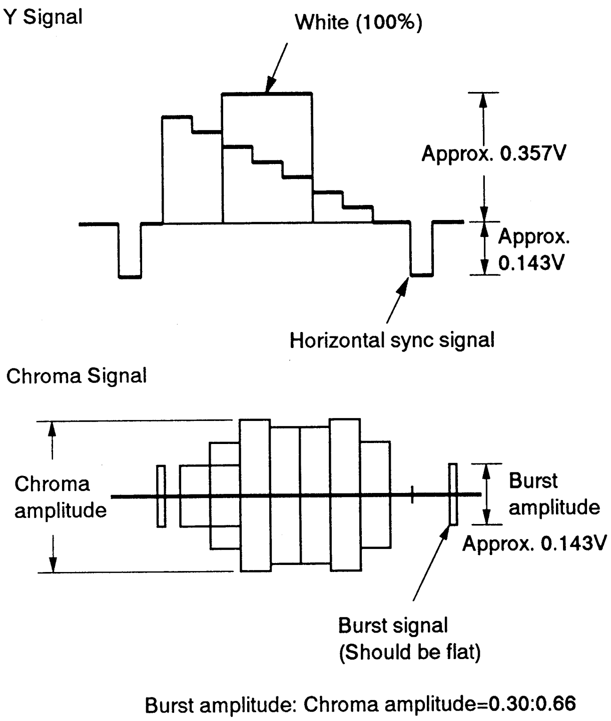
### 3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

#### 1. CAMERA Input

Connect the oscilloscope to Pin ⑬ of CN203 on VS board, and check that the sync signal of the Y signal is approximately 0.143 Vp-p and that the amplitude of the video section is approximately 0.357 Vp-p. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to Pin ⑰ of CN203 on VS board, and check that the burst signal amplitude of the chroma signal is approximately 0.143 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30:0.66. The Y and chroma signals used in the adjustment are shown in Fig. 7-3-2.

Note: Be sure to check in the recording mode.


Y Signal
White (100%)
Approx. 0.357V
Approx. 0.143V
Horizontal sync signal
Chroma Signal
Chroma amplitude
Burst amplitude
Approx. 0.143V
Burst signal
(Should be flat)

Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 7-3-2. Color bar signal of pattern generator

#### 2. VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the sync signal amplitude of the video signal is approximately 0.286V, the amplitude of the video section is approximately 0.714V, the amplitude of the burst signal is approximately 0.286V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30:0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 7-3-3.

Note: Be sure to check in the record mode.

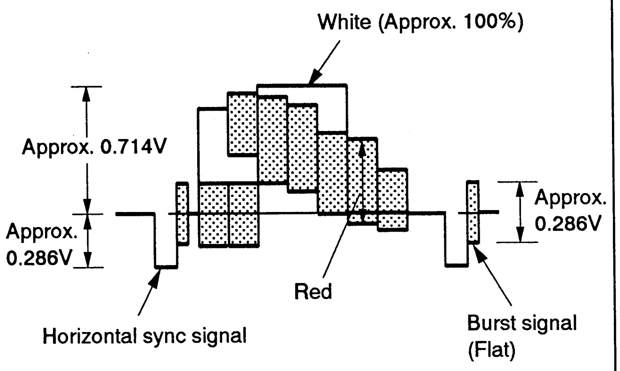

White (Approx. 100%)
Approx. 0.714V
Approx. 0.286V
Approx. 0.286V
Red
Horizontal sync signal
Burst signal
(Flat)

Fig. 7-3-3. Color Bar Signal of Pattern Generator

### 3-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

| Name | Record-ing mode | Tape type | Tape speed | Recording contents | | Usage |
|---|---|---|---|---|---|---|
| | | | | Video area | PCM area | |
| Tracking<br>WR5-1NP | L | MP | SP | CH2: Signal for 1 MHz tape path adjustment | | Tape path adjustment<br>Switching position adjustment |
| Video frequency characteristics<br>WR5-7NE | E | ME | SP | RF sweep 0 to 15 MHz<br>Marker<br>2, 4.5, 7, 8.5, 10 MHz | | Frequency characteristics adjustment |
| Video frequency characteristics<br>WR5-2N | L | MP | SP | RF sweep<br>Marker<br>1, 3.58, 5.5, 7 MHz | | |
| Operation check (SP mode)<br>WR5-5NSP | L | MP | SP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>400 Hz 60% modulation | • Audio signal (PCM)<br>Monoscope section<br>20 Hz 20 sec.<br>400 Hz 20 sec.<br>14 kHz 20 sec.<br>} Repeated 4 times<br>Color bar section<br>1 kHz 4 minutes | Checking operations |
| Operation check<br>WR5-8NSE | E | ME | SP | | • Audio signal (PCM)<br>400 Hz | |
| Operation check<br>WR5-4NL | L | MP | LP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>400 Hz 60% modulation | | |
| Operation check<br>WR5-8NLE | E | ME | LP | | • Audio signal (PCM)<br>400 Hz | |
| AFM stereo<br>Operation check<br>WR5-9NS | L | MP | SP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>Stereo section (color bar)<br>Lch: 400 Hz, Rch: 1 kHz<br>(L+R:<br>1.5 MHz ± 60 kHz DEV<br>L–R:<br>1.7 MHz ± 30 kHz DEV)<br>Bilingual section<br>(Monoscope)<br>MAIN: 400 Hz<br>(1.5 MHz ± 60 kHz DEV)<br>SUB: 1 kHz<br>(1.7 MHz ± 30 kHz DEV) | • Audio signal (PCM)<br>400 Hz 8 minutes | AFM stereo<br>Checking operations |

**Note:** Recording mode

L ·············· Normal (Original) mode

E ·············· hi8 (hi band) mode

Tape type

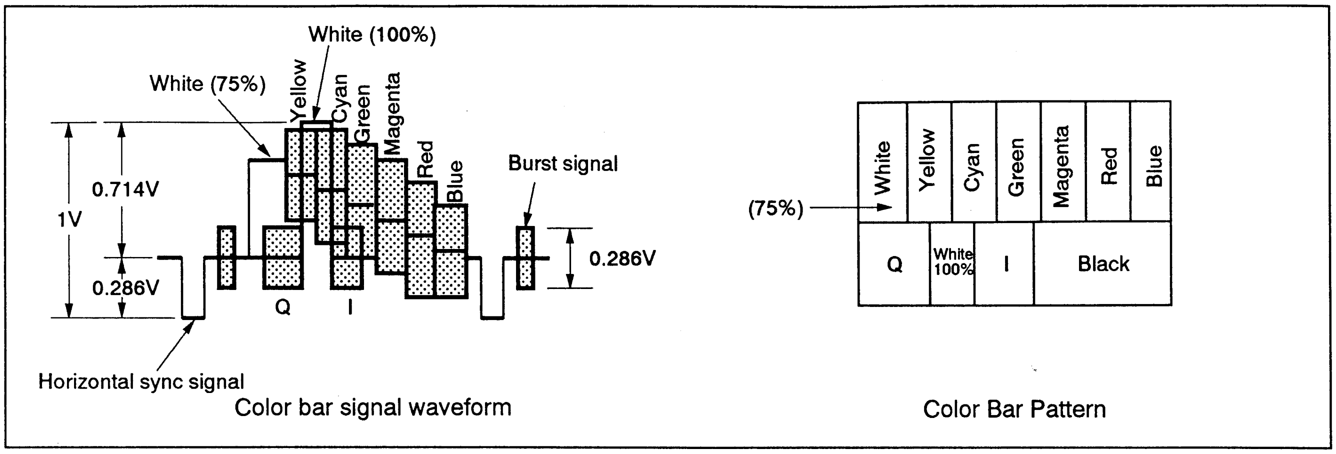
MP ············ Particle type metal tape

ME············ Evaporated type metal type

Table 7-3-1.

Fig. 7-3-4. shows the 75% color bar signals recorded on the alignment tape.

**Note:** Measure using the video output terminal (Terminated at 75 Ω )


White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
0.286V
Q
I
Horizontal sync signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color bar signal waveform

Color Bar Pattern

Fig. 7-3-4. Color Bar Signals of the Alignment Tape

### 3-1-7. Input/Output Level and Impedance

1. CCD-TR42/TR70/TR72/TR80/TR82/TR430/TR550

| | |
|---|---|
| Video output | Phono jack, 1 Vp-p, 75Ω , unbalanced, sync negative |
| Audio output | Phono jack, –7.5 dBs, (at load impedance 47 kΩ ) impedance less than 2.2 kΩ |

2. CCD-TR400/TR750

| | |
|---|---|
| S video input/output | 4-pin mini DIN,<br>Luminance signal:<br>1 Vp-p, 75 ohms, unbalanced, sync negative<br>Chrominance signal:<br>0.286 Vp-p, 75 ohms, unbalanced |
| Video input/output | Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative |
| Audio input/output | Phono jack,<br>Input: –7.5 dBs, input impedance more than 47 kilohms<br>Output: –7.5 dBs, (at load impedance 47 kilohms), impedance less than 2.2 kilohms |

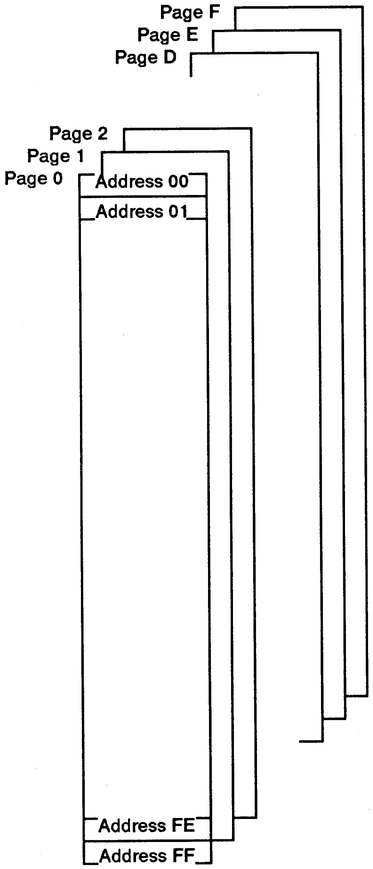
### 3-1-8. Service Mode

#### 1. Setting the service mode

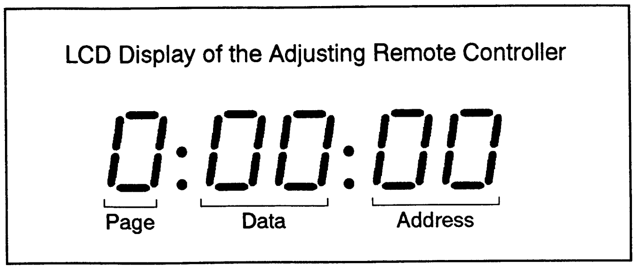
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which shows the condition of the unit.

The unit can be set into the test mode and adjustment mode by connecting the adjusting remote commander (Set the HOLD switch to "HOLD").

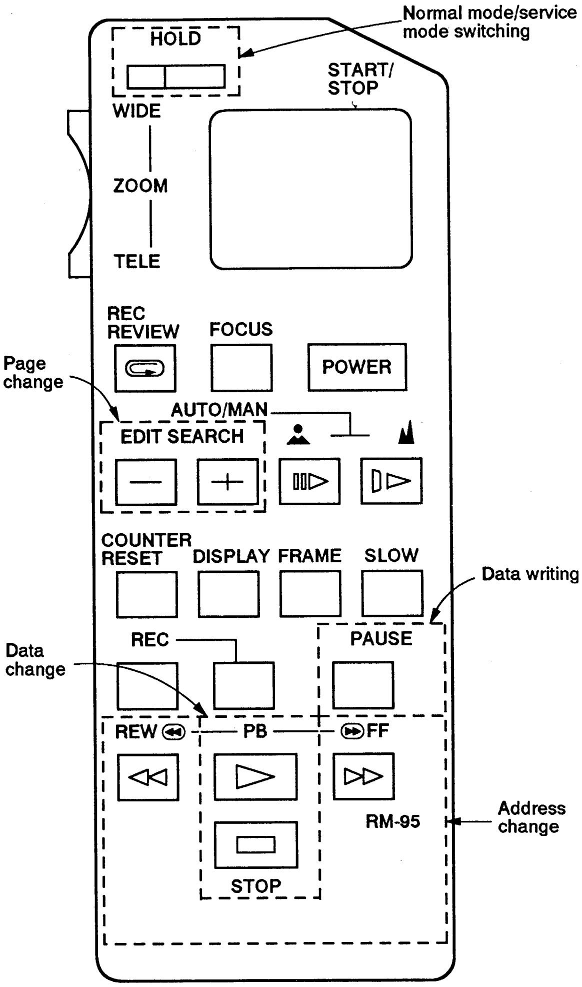
(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

| Page | Page Layout |
|---|---|
| 0 | |
| 1 | D page write protect setting/release |
| 2 | Mode controller RAM, I/O |
| 3 | Mechanism controller RAM, I/O |
| 4 | |
| 5 | |
| 6 | Shared by camera section |
| 7 | Camera controller RAM, I/O |
| 8 | |
| 9 | |
| A | 2 bytes data display |
| B | |
| C | |
| D | VTR EEPROM (Note 1) |
| E | |
| F | Camera EEPROM (Note 2) |


LCD Display of the Adjusting Remote Controller
0:00:00
Page
Data
Address

Adjusting remote commander RM-95 (J-6082-053-A)


Normal mode/service mode switching
HOLD
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page change
AUTO/MAN
EDIT SEARCH
—
+
COUNTER RESET
DISPLAY
FRAME
SLOW
Data writing
REC
PAUSE
Data change
REW
PB
FF
RM-95
Address change
STOP

**Note 1:** The data of this page is written in the EEPROM (IC501 of VS board).

**Note 2:** The data of this page is written in the EEPROM (IC601 of VC board).

(2) Category codes
This unit uses category codes for pages 2 and 3.
(Example)

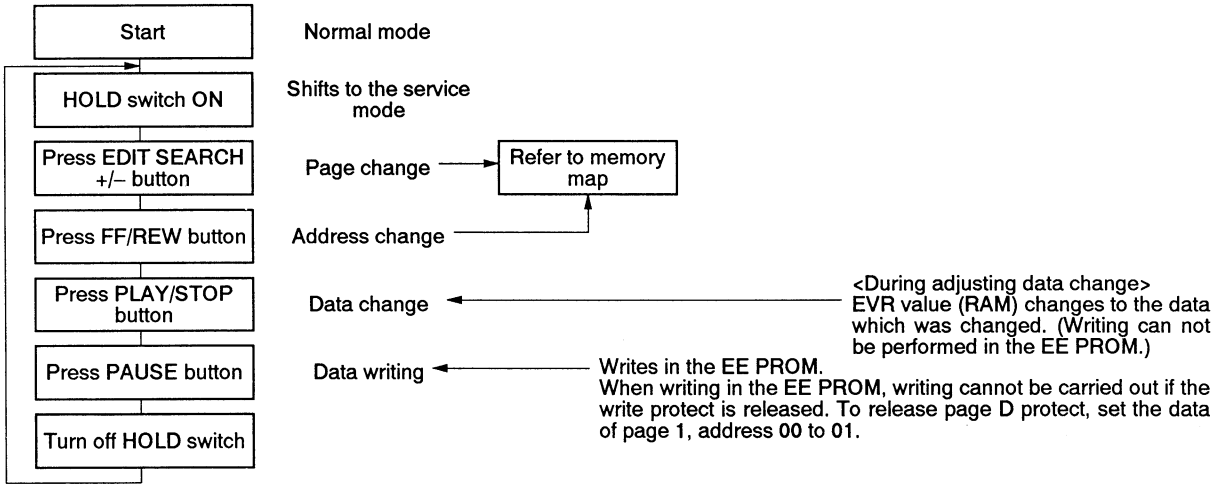
| | | | |
|---|---|---|---|
| Specification of | Page 2 | Category 01 | Address 47 |

Page 2 is the mode controller
Page 3 is the mechanism controller

The actual category and address are specified by the adjusting remote commander as follows.

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 2 | 00 | 01 | Select category 01 using the data of page 2, address 00. From here onwards, category 01 will be selected at page 2 until the data of page 2, address 01 is rewritten. |
| 2 | 2 | 47 | | As the data of page 2, address 00 is 01, select page 2, address 47 to select page 2, category 01, address 47. (The data of this address is the battery voltage A/D conversion value of the mode controller input.) |

[Shifting to the service mode using the adjusting remote commander]


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press EDIT SEARCH +/– button
Page change
Refer to memory map
Press FF/REW button
Address change
Press PLAY/STOP button
Data change
<During adjusting data change>
EVR value (RAM) changes to the data which was changed. (Writing can not be performed in the EE PROM.)
Press PAUSE button
Data writing
Writes in the EE PROM.
When writing in the EE PROM, writing cannot be carried out if the write protect is released. To release page D protect, set the data of page 1, address 00 to 01.
Turn off HOLD switch

| Command Name | Command Function | Normal LANC Command |
|---|---|---|
| Page Up | Page+1 | Edit Search+ |
| Page Down | Page–1 | Edit Search – |
| Direct Page Set | Sets to the specified page | Event Clear |
| Address Up | Address+1 | Fast Forward |
| Address Down | Address–1 | Rewind |
| Data Up | Data+1 | Play Back |
| Data Down | Data–1 | Stop |
| Store | Writes data in the EEPROM, RAM | Pause |

(3) Additional note on adjustment
After the completion of the all adjustments, cancell the adjustment mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) Return data of the address: 00 on page: 1 to 00. And when data on page: 2 is changed, return the data to the original condition.

## 2. Page D write protect

Release/set the page D write protect.

| | |
|---|---|
| Page 1 | Address 00 |

| Data | Function |
|---|---|
| 00 | Normal (Write protect condition) |
| 01 | Release the write protect |

## 3. Test mode setting

Set/release each test mode. Release the protect (Page: 1, Address: 00, Data: 01) before setting the data.

| | |
|---|---|
| Page D | Address 02 |

| Data | Function |
|---|---|
| 00 | Normal |
| 01 | Test mode 1<br>Various emergency prohibitions and releases<br>Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition<br>Power off prohibition/release by battery end |
| 02 | Test mode 2<br>Not used |
| 03 | Test mode 3<br>Track shift<br>Performs the track shift playback<br>Rear lock distinction prohibition during PB<br>SP/LP automatic discrimination prohibition, manual switching |
| 04 | Test mode 4<br>Rear lock mode<br>Performs rear lock playback<br>SP/LP automatic discrimination prohibition, manual switching |

※ For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (6.3 Vdc).

※ Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

## 4. Emergency code

Fault (error) symptoms can be checked.

| | |
|---|---|
| Page D | Address E4 |

Last emergency code
……Last error code generated (This data will be renewed each time an error occurs.)

| | |
|---|---|
| Page D | Address E8 |

2nd emergency code
……2nd error code generated

| | |
|---|---|
| Page D | Address EC |

First emergency code
……First error code generated

※ Be sure to rewrite the data of addresses E4, E8 and EC to 00 after repairs/adjustments.

※ When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

| Code | Error Condition |
|---|---|
| 00 | No error |
| 01 | Loading motor error |
| 02 | Reel error during unloading |
| 03 | Reel errors at other times |
| 04 | Capstan error |
| 05 | FG error during drum start up |
| 06 | PG error during drum start up |
| 07 | FG error during normal drum conditions |
| 08 | PG error during normal drum conditions |
| 09 | Phase error during normal drum conditions |

## 5. Emergency mode

The operation mode can be checked during faults.

| | |
|---|---|
| Page D | Address E5 |

Last emergency mode

……The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

| | |
|---|---|
| Page D | Address E9 |

2nd emergency mode

……The operation mode when the 2nd error is generated

| | |
|---|---|
| Page D | Address ED |

First emergency mode

……The operation mode when the first error is generated

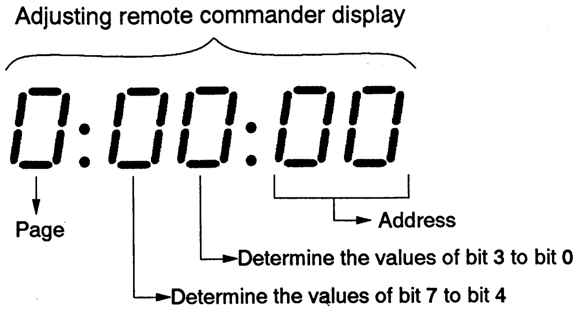
※ Be sure to rewrite the data of addresses E5, E9 and ED to 00 after repairs/adjustments.

※ When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

| Code | Error Conditions |
|---|---|
| 00 | BEFOR INITIALIZE |
| 01 | EJECTED |
| 02 | NORMAL STOP |
| 03 | FF |
| 04 | NORMAL REC |
| 06 | NORMAL PB |
| 07 | PB PAUSE |
| 12 | LOADING |
| 14 | REC PAUSE |
| 26 | X1 |
| 27 | 1/5 SLOW |
| 31 | UNLOADING |
| 46 | CUE |
| 56 | REVIEW |
| 62 | STOP TAPE END |
| 66 | X2 |
| 67 | FRAME |
| 72 | STOP TAPE TOP |
| 83 | REWIND |
| 85 | REC REVIEW (+) |
| 95 | REC REVIEW (–) |
| 97 | –PB PAUSE |
| A2 | EMERGENCY LOADING |
| A5 | EDIT SEARCH (+) |
| B1 | EMERGENCY UNLOADING |
| B2 | STOP EMERGENCY 1 |
| B5 | EDIT SEARCH (–) |
| C2 | STOP EMERGENCY 2 |
| E2 | STOP NO CASSETTE |
| F5 | EDIT PAUSE |

## 6. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

| Remote controller display | Bit value | | | |
|---|---|---|---|---|
| | bit 3 or bit 7 | bit 2 or bit 6 | bit 1 or bit 5 | bit 0 or bit 4 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 1 | 1 |
| 4 | 0 | 1 | 0 | 0 |
| 5 | 0 | 1 | 0 | 1 |
| 6 | 0 | 1 | 1 | 0 |
| 7 | 0 | 1 | 1 | 1 |
| Ⓐ→ 8 | 1 | 0 | 0 | 0 |
| 9 | 1 | 0 | 0 | 1 |
| A(A) | 1 | 0 | 1 | 0 |
| B(b) | 1 | 0 | 1 | 1 |
| C(c) | 1 | 1 | 0 | 0 |
| D(d) | 1 | 1 | 0 | 1 |
| Ⓑ→ E(E) | 1 | 1 | 1 | 0 |
| F(F) | 1 | 1 | 1 | 1 |

**(Example)** If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

## 7. Battery voltage check

| | | |
|---|---|---|
| Page 2 | Category 01 | Address 47 |

| Display Data | Battery Voltage |
|---|---|
| F0 | Approx. 10.6 Vdc |
| E0 | Approx. 9.9 Vdc |
| D0 | Approx. 9.2 Vdc |
| C0 | Approx. 8.5 Vdc |
| B0 | Approx. 7.8 Vdc |
| A0 | Approx. 7.1 Vdc |
| 90 | Approx. 6.4 Vdc |
| 80 | Approx. 5.7 Vdc |
| 70 | Approx. 5.0 Vdc |

Using method:

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 2 | 00 | 01 | Specification of category 01 |
| 2 | 2 | 47 | | The battery voltage can be discriminated by the display data. |

※ Voltage measurement accuracy is approx. ± 10%.

## 8. Mechanism controller input/output check

| Page 2 | Category 00 | Address 83 |
|---|---|---|

| Bit | Input Signal | Input Signal Level |
|---|---|---|
| 0 | | |
| 1 | E/L DET | "1"=Hi8, "0"=Normal |
| 2 | SP/LP DET | "1"=SP, "0"=LP |
| 3 | CLOG DET | "1"=Clog detected, "0"=Others |
| 4 | REC PROOF | "1"=Recording prohibited, "0"=Recording possible |
| 5 | TAPE PREEND | "1"=Tape preend, "0"=Others |
| 6 | DEW DET | "0"=Condensation occured, "1"=Others |
| 7 | CASSETTE IN | "0"=No cassette |

Using method:

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 2 | 00 | 00 | Specification of category 00 |
| 2 | 2 | 83 | | The condition of each input signal can be discriminated by differentiating the bit value of the display data. |

| Page 2 | Category 00 | Address 84 |
|---|---|---|

| Bit | Input Signal | Input Signal Level |
|---|---|---|
| 0 | VA PB MODE | "1"=PB, "0"=REC |
| 1 | RP PB MODE | "1"=PB, "0"=REC |
| 2 | JOG | "1"=Variable speed playback, "0"=Others |
| 3 | ME/MP SW | "1"=ME tape, "0"=Other tape |
| 4 | Hi8 MP SW | "1"=Hi8 MP tape, "0"=Other tape |
| 5 | SERVO OPERATION | "1"=SP mode, "0"=LP mode |
| 6 | VIDEO MUTE | "1"=Mute, "0"=Video output |
| 7 | AUDIO MUTE | "1"=Mute, "0"=Audio output |

Using method:

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 2 | 00 | 00 | Specification of category 00 |
| 2 | 2 | 84 | | The condition of each signal can be discriminated by differentiating the bit value of the display data. |

### 9. Mode switch and CC DOWN switch check

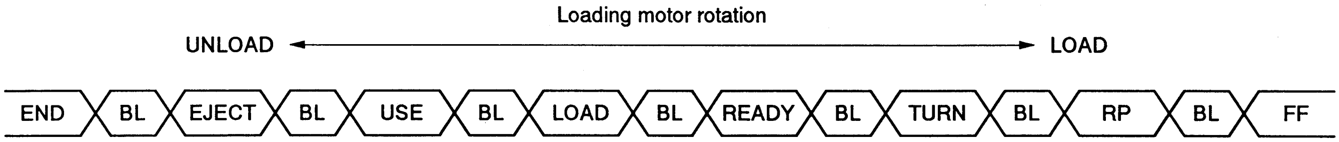
The mode switch position (mechanical section condition) can be checked.

| Page 3 | Category 00 | Address E9 |
|---|---|---|

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| MSW 2 | MSW 1 | MSW 0 | CC DOWN | | | | |

| | | | | DATA | POSITION | FUNCTION |
|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0/1 | E*/F* | BL | Interval of each position |
| 0 | 1 | 1 | 1 | 7* | END | FULL END processing (T side lock removal) |
| 0 | 0 | 1 | 1 | 3* | EJECT | Cassette compartment ejection |
| 1 | 0 | 1 | 1 | B* | USE | EJECTED (Unskate end) |
| 0 | 0 | 1 | 0 | 2* | LOAD | LOADING (Skate in) |
| 1 | 0 | 0 | 0 | 8* | READY | NORMAL STOP position |
| 1 | 1 | 0 | 0 | C* | TURN | OFF of pinch roller only with STOP↔FF/REW (oscillating position) |
| 0 | 1 | 0 | 0 | 4* | RP | PB, REC, RVS, REV, CUE |
| 0 | 0 | 0 | 0 | 0* | FF | FF/REW |

*: Don't care


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

Using method:

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 3 | 00 | 00 | Specification of category 00 |
| 2 | 3 | E9 | | The mode switch position and CC DOWN switch condition can be discriminated by the display data. |

## 10. Tape top/end sensor check

| | | |
|---|---|---|
| Page 3 | Category 02 | Address 0A |

| Display Data | Tape Top/End Sensor Condition |
|---|---|
| 00 | Tape present (Middle of tape) |
| 01 | Tape end |
| 10 | Tape top |
| 11 | No tape |

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 3 | 00 | 02 | Specification of category 02 |
| 2 | 3 | 0E | 10 | Request for tape top/end sampling operations |
| 3 | 3 | 0A | | The condition of the tape top/end sensor can be discriminated by the display data. |

## 11. Version of mechanical control microprocessor

| | | |
|---|---|---|
| Page 3 | Category 02 | Address 0B |

| Display Data | Microprocessor version |
|---|---|
| 01 | Version 1 |

Using method:

| Order | Page | Address | Data | Procedure |
|---|---|---|---|---|
| 1 | 3 | 00 | 02 | Specification of category 02 |
| 2 | 3 | 0B | | The microprocessor version can be discriminated by the display data. |

## 12. Page D address list for standard 8 mm model (CCD-TR42/TR70/TR72/TR80/TR82/TR430/TR550)

**Note 1:** The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

**Note 2:** The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

**Note 3:** In some case, data have been input to the page D address 91 to AF, BC to D3 and F0 to FF. This has no relation to the adjustment.

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 00 | | Not used | | |
| 01 | | Not used | | |
| 02 | TEST MODE (MECHA-CON) | Mecha-con (IC505) test mode | 00 | 00 |
| 03 | TEST MODE (MODE-CON) | Mode-con (IC503) test mode | 00 | 00 |
| 04 | SW POSITION (L) | Switching position adjustment (Low) | 80 | |
| 05 | SW POSITION (H) | Switching position adjustment (High) | 0B | |
| 06 | BATTERY END | Battery end adjustment | 66 | |
| 07 | BATTERY PRE-END | Battery end adjustment | 7F | |
| 08 | BATTERY LOW | Battery end adjustment | 84 | |
| 09 | BATTERY MIDDLE | Battery end adjustment | 8A | |
| 0A | BATTERY HIGH | Battery end adjustment | 8E | |
| 0B | | | 00 | 00 |
| 0C | | Not used | | |
| 0D | | Not used | | |
| 0E | | Not used | | |
| 0F | | Not used | | |
| 10 | | Design data | 00 | 00 |
| 11 | | Design data | 00 | 00 |
| 12 | | Design data | 00 | 00 |
| 13 | | Design data | 00 | 00 |
| 14 | | Design data | 95 | 95 |
| 15 | | Design data | 77 | 77 |
| 16 | | Design data | 01 | 01 |
| 17 | VARIATION | CCD-TR42/TR70/TR72/TR80/TR82 | 02 | 02 |
| | | CCD-TR430/TR550 | 03 | 03 |
| 18 | FEATURE | CCD-TR42/TR70/TR72/TR80/TR430 | 04 | 04 |
| | | CCD-TR82/TR550 | 64 | 64 |
| 19 | FEATURE | | 80 | 80 |
| 1A | FEATURE | CCD-TR42/TR70/TR82/TR550 | 58 | 58 |
| | | CCD-TR72/TR80/TR430 | DC | DC |
| 1B | FEATURE | CCD-TR42/TR70/TR72/TR80/TR82/TR430 | 20 | 20 |
| | | CCD-TR550 | 60 | 60 |
| 1C | FEATURE | | 00 | 00 |
| 1D | FEATURE | | 00 | 00 |
| 1E | | Not used | | |
| 1F | | Not used | | |

Table 7-3-2. (1)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 20 | | Not used | | |
| 21 | | Not used | | |
| 22 | | Not used | | |
| 23 | | | 00 | 00 |
| 24 | | Design data | 00 | 00 |
| 25 | | Design data | 00 | 00 |
| 26 | | Design data | 14 | 14 |
| 27 | | Design data | 14 | 14 |
| 28 | | Design data | 64 | 64 |
| 29 | | Design data | 64 | 64 |
| 2A | | Design data | 6E | 6E |
| 2B | | Design data | 6E | 6E |
| 2C | | Design data | 64 | 64 |
| 2D | | Design data | 64 | 64 |
| 2E | | Design data | 6E | 6E |
| 2F | | Design data | 6E | 6E |
| 30 | | Design data | DC | DC |
| 31 | | Design data | DC | DC |
| 32 | EVR REC C (SP L ME) | SP Normal ME REC C adjustment [IC951 ⑩] | DC | |
| 33 | EVR REC C (SP L MP) | SP Normal MP REC C adjustment [IC951 ⑩] | DC | |
| 34 | | | DC | DC |
| 35 | | | DC | DC |
| 36 | | Design data | DC | DC |
| 37 | | Design data | DC | DC |
| 38 | EVR REC LOW 1 (ME) | 1ch ME REC L adjustment [IC951 ㊲] | E4 | |
| 39 | EVR REC LOW 1 (MP) | 1ch MP REC L adjustment [IC951 ㊲] | EB | |
| 3A | EVR REC LOW 2 (ME) | 2ch ME REC L adjustment [IC951 ㊲] | E4 | |
| 3B | EVR REC LOW 2 (MP) | 2ch MP REC L adjustment [IC951 ㊲] | EB | |
| 3C | | Not used | | |
| 3D | | Not used | | |
| 3E | | Not used | | |
| 3F | | Not used | | |
| 40 | | Not used | | |
| 41 | | Not used | | |
| 42 | EVR REC Y 1CH (L ME) | 1ch Normal ME REC Y level adjustment [IC951 ㊱] | A9 | |
| 43 | EVR REC Y 1CH (L MP) | 1ch Normal MP REC Y level adjustment [IC951 ㊱] | A9 | |
| 44 | | Not used | | |
| 45 | | Not used | | |
| 46 | EVR REC Y 2CH (L ME) | 2ch Normal ME REC Y level adjustment [IC951 ㊱] | A9 | |
| 47 | EVR REC Y 2CH (L MP) | 2ch Normal MP REC Y level adjustment [IC951 ㊱] | A9 | |
| 48 | | Not used | | |
| 49 | | Not used | | |

Table 7-3-2. (2)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 4A | | Not used | | |
| 4B | | Not used | | |
| 4C | | Not used | | |
| 4D | | Not used | | |
| 4E | | Not used | | |
| 4F | | Not used | | |
| 50 | | Design data | A2 | A2 |
| 51 | | Design data | A1 | A1 |
| 52 | | Not used | | |
| 53 | | Not used | | |
| 54 | | | 00 | 00 |
| 55 | | | 00 | 00 |
| 56 | | | 90 | 90 |
| 57 | | | 00 | 00 |
| 58 | | | 00 | 00 |
| 59 | | | 75 | 75 |
| 5A | | | E6 | E6 |
| 5B | | | E6 | E6 |
| 5C | | | E6 | E6 |
| 5D | | | E6 | E6 |
| 5E | EVR MT 1CH (L) | 1ch Normal frequency characteristic adjustment [IC951 ⑱] | E6 | |
| 5F | | | E2 | E2 |
| 60 | | | E2 | E2 |
| 61 | | | E2 | E2 |
| 62 | | | E2 | E2 |
| 63 | EVR MT 2CH (L) | 2ch Normal frequency characteristic adjustment [IC951 ⑳] | E2 | |
| 64 | | Not used | | |
| 65 | | Not used | | |
| 66 | | Not used | | |
| 67 | | Not used | | |
| 68 | | Not used | | |
| 69 | | | E6 | E6 |
| 6A | | | E6 | E6 |
| 6B | | | E6 | E6 |
| 6C | | | E6 | E6 |
| 6D | | | E6 | E6 |
| 6E | | Not used | | |
| 6F | | Not used | | |
| 70 | EVR SYNC AGC | SYNC AGC adjustment [IC951 ㊳] | 8E | |
| 71 | EVR COMB ADJ | Chroma comb filter adjustment [IC951 ㊴] | 95 | |
| 72 | | | B0 | B0 |
| 73 | | | B0 | B0 |

Table 7-3-2. (3)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| BB | GAMMA 2 | Gamma 2 setting [IC903 ⑫] CCD-TR70/TR80 | F0 | F0 |
| BC to D3 | | | | |
| D4 | CCD FLAW DATA | CCDimager correction data (for backup)<br>※ Refer "CCD Imager Correction Data Writing" of Camera Section Adjustments | | |
| D5 | CCD FLAW DATA | | | |
| D6 | CCD FLAW DATA | | | |
| D7 | CCD FLAW DATA | | | |
| D8 | CCD FLAW DATA | | | |
| D9 | CCD FLAW DATA | | | |
| DA | CCD FLAW DATA | | | |
| DB | CCD FLAW DATA | | | |
| DC | CCD FLAW DATA | | | |
| DD | CCD FLAW DATA | | | |
| DE | CCD FLAW DATA | | | |
| DF | CCD FLAW DATA | | | |
| E0 | CCD FLAW DATA | | | |
| E1 | CCD FLAW DATA | | | |
| E2 | CCD FLAW DATA | | | |
| E3 | CCD FLAW DATA | | | |
| E4 | EMERGENCY LAST CODE | Last emergency code | 00 | |
| E5 | EMERGENCY LAST MODE | Last emergency mode | 00 | |
| E6 | | N.C. | 00 | |
| E7 | | N.C. | 00 | |
| E8 | EMERGENCY 2ND CODE | 2nd emergency code | 00 | |
| E9 | EMERGENCY 2ND MODE | 2nd emergency mode | 00 | |
| EA | | N.C. | 00 | |
| EB | | N.C. | 00 | |
| EC | EMERGENCY 1ST CODE | 1st emergency code | 00 | |
| ED | EMERGENCY 1ST MODE | 1st emergency mode | 00 | |
| EE | | N.C. | 00 | |
| EF | | N.C. | 00 | |

Table 7-3-2. (5)

## 13. Page D address list for Hi8 model (CCD-TR400/TR750)

**Note 1:** The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

**Note 2:** The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

**Note 3:** In some case, data have been input to the page D address 91 to D3 and F0 to FF. This has no relation to the adjustment.

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 00 | | Not used | | |
| 01 | | Not used | | |
| 02 | TEST MODE (MECHA-CON) | Mecha-con (IC505) test mode | 00 | 00 |
| 03 | TEST MODE (MODE-CON) | Mode-con (IC503) test mode | 00 | 00 |
| 04 | SW POSITION (L) | Switching position adjustment (Low) | 80 | |
| 05 | SW POSITION (H) | Switching position adjustment (High) | 0B | |
| 06 | BATTERY END | Battery end adjustment | 66 | |
| 07 | BATTERY PRE-END | Battery end adjustment | 7F | |
| 08 | BATTERY LOW | Battery end adjustment | 84 | |
| 09 | BATTERY MIDDLE | Battery end adjustment | 8A | |
| 0A | BATTERY HIGH | Battery end adjustment | 8E | |
| 0B | | | 00 | 00 |
| 0C | | Not used | | |
| 0D | | Not used | | |
| 0E | | Not used | | |
| 0F | | Not used | | |
| 10 | | | 00 | 00 |
| 11 | | | 00 | 00 |
| 12 | | | 00 | 00 |
| 13 | | | 00 | 00 |
| 14 | | | 95 | 95 |
| 15 | | | 77 | 77 |
| 16 | | | 01 | 01 |
| 17 | VARIATION | CCD-TR400 | 12 | 12 |
| | | CCD-TR750 | 13 | 13 |
| 18 | FEATURE | | E8 | E8 |
| 19 | FEATURE | | 80 | 80 |
| 1A | FEATURE | | DC | DC |
| 1B | FEATURE | CCD-TR400 | 20 | 20 |
| | | CCD-TR750 | 60 | 60 |
| 1C | FEATURE | | 00 | 00 |
| 1D | FEATURE | | 00 | 00 |
| 1E | | Not used | | |
| 1F | | Not used | | |

Table 7-3-3. (1)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 20 | | Not used | | |
| 21 | | Not used | | |
| 22 | | Not used | | |
| 23 | | | 03 | 03 |
| 24 | | Design data | 00 | 00 |
| 25 | | Design data | 00 | 00 |
| 26 | | Design data | 1C | 1C |
| 27 | | Design data | 25 | 25 |
| 28 | | Design data | D8 | D8 |
| 29 | | Design data | E5 | E5 |
| 2A | | Design data | DC | DC |
| 2B | | Design data | EF | EF |
| 2C | | Design data | D8 | D8 |
| 2D | | Design data | E5 | E5. |
| 2E | | Design data | DC | DC |
| 2F | | Design data | EF | EF |
| 30 | EVR REC C (SP E ME) | SP Hi8 ME REC C adjustment [IC951 ⑩] | E6 | |
| 31 | EVR REC C (SP E MP) | SP Hi8 MP REC C adjustment [IC951 ⑩] | E6 | |
| 32 | EVR REC C (SP L ME) | SP Normal ME REC C adjustment [IC951 ⑩] | E6 | |
| 33 | EVR REC C (SP L MP) | SP Normal MP REC C adjustment [IC951 ⑩] | E6 | |
| 34 | EVR REC C (LP E ME) | LP Hi8 ME REC C adjustment [IC951 ⑩] | E6 | E6 |
| 35 | EVR REC C (LP E MP) | LP Hi8 MP REC C adjustment [IC951 ⑩] | E6 | E6 |
| 36 | EVR REC C (LP L ME) | LP Normal ME REC C adjustment [IC951 ⑩] | E6 | E6 |
| 37 | EVR REC C (LP L MP) | LP Normal MP REC C adjustment [IC951 ⑩] | E6 | E6 |
| 38 | EVR REC LOW 1 (ME) | 1ch ME REC L adjustment [IC951 ㊲] | D6 | |
| 39 | EVR REC LOW 1 (MP) | 1ch MP REC L adjustment [IC951 ㊲] | E0 | |
| 3A | EVR REC LOW 2 (ME) | 2ch ME REC L adjustment [IC951 ㊲] | D6 | |
| 3B | EVR REC LOW 2 (MP) | 2ch MP REC L adjustment [IC951 ㊲] | E0 | |
| 3C | | Not used | | |
| 3D | | Not used | | |
| 3E | | Not used | | |
| 3F | | Not used | | |
| 40 | EVR REC Y 1CH (E ME) | 1ch Hi8 ME REC Y level adjustment [IC951 ㊱] | D8 | |
| 41 | EVR REC Y 1CH (E MP) | 1ch Hi8 MP REC Y level adjustment [IC951 ㊱] | DD | |
| 42 | EVR REC Y 1CH (L ME) | 1ch Normal ME REC Y level adjustment [IC951 ㊱] | DC | |
| 43 | EVR REC Y 1CH (L MP) | 1ch Normal MP REC Y level adjustment [IC951 ㊱] | D5 | |
| 44 | EVR REC Y 2CH (E ME) | 2ch Hi8 ME REC Y level adjustment [IC951 ㊱] | D8 | |
| 45 | EVR REC Y 2CH (E MP) | 2ch Hi8 MP REC Y level adjustment [IC951 ㊱] | DD | |
| 46 | EVR REC Y 2CH (L ME) | 2ch Normal ME REC Y level adjustment [IC951 ㊱] | DC | |
| 47 | EVR REC Y 2CH (L MP) | 2ch Normal MP REC Y level adjustment [IC951 ㊱] | D5 | |
| 48 | | Not used | | |
| 49 | | Not used | | |

Table 7-3-3. (2)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 4A | | Not used | | |
| 4B | | Not used | | |
| 4C | | Not used | | |
| 4D | | Not used | | |
| 4E | | Not used | | |
| 4F | | Not used | | |
| 50 | | | D3 | D3 |
| 51 | | | CE | CE |
| 52 | | Not used | | |
| 53 | | Not used | | |
| 54 | | | C2 | C2 |
| 55 | | | C2 | C2 |
| 56 | | | 97 | 97 |
| 57 | | | 70 | 70 |
| 58 | | | 70 | 70 |
| 59 | | | 85 | 85 |
| 5A | EVR MT 1CH (SP E ME) | 1ch SP Hi8 ME frequency characteristic adjustment [IC951 ⑱] | DC | |
| 5B | EVR MT 1CH (SP E MP) | 1ch SP Hi8 MP frequency characteristic adjustment [IC951 ⑱] | DC | |
| 5C | EVR MT 1CH (LP E ME) | 1ch LP Hi8 ME frequency characteristic adjustment [IC951 ⑱] | DC | |
| 5D | EVR MT 1CH (LP E MP) | 1ch LP Hi8 MP frequency characteristic adjustment [IC951 ⑱] | DC | |
| 5E | EVR MT 1CH (L) | 1ch Normal frequency characteristic adjustment [IC951 ⑱] | DC | |
| 5F | EVR MT 2CH (SP E ME) | 2ch SP Hi8 ME frequency characteristic adjustment [IC951 ⑳] | CD | |
| 60 | EVR MT 2CH (SP E MP) | 2ch SP Hi8 MP frequency characteristic adjustment [IC951 ⑳] | CD | |
| 61 | EVR MT 2CH (LP E ME) | 2ch LP Hi8 ME frequency characteristic adjustment [IC951 ⑳] | CD | |
| 62 | EVR MT 2CH (LP E MP) | 2ch LP Hi8 MP frequency characteristic adjustment [IC951 ⑳] | CD | |
| 63 | EVR MT 2CH (L) | 2ch Normal frequency characteristic adjustment [IC951 ⑳] | CD | |
| 64 | | Not used | | |
| 65 | | Not used | | |
| 66 | | Not used | | |
| 67 | | Not used | | |
| 68 | | Not used | | |
| 69 | | | DC | DC |
| 6A | | | DC | DC |
| 6B | | | DC | DC |
| 6C | | | DC | DC |
| 6D | | | DC | DC |
| 6E | | Not used | | |
| 6F | | Not used | | |
| 70 | EVR SYNC AGC | SYNC AGC adjustment [IC951 ㊳] | 8E | |
| 71 | EVR COMB ADJ | Chroma comb filter adjustment [IC951 ㊴] | 95 | |
| 72 | | | B0 | B0 |
| 73 | | | B0 | B0 |

Table 7-3-3. (3)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 74 | EVR CARRIER (E) | Hi8 Y-FM carrier frequency adjustment [IC951 ㊸] | C3 | |
| 75 | EVR CARRIER (L) | Normal Y-FM carrier frequency adjustment [IC951 ㊸] | BB | |
| 76 | EVR DEVIATION (E) | Hi8 Y-FM deviation adjustment [IC951 ㊹] | A6 | |
| 77 | EVR DEVIATION (L) | Normal Y-FM deviation adjustment [IC951 ㊹] | 97 | |
| 78 | | | 59 | 59 |
| 79 | | | 53 | 53 |
| 7A | | | 7B | 7B |
| 7B | | | 7B | 7B |
| 7C | | | 00 | 00 |
| 7D | | | 00 | 00 |
| 7E | | | 00 | 00 |
| 7F | | | 00 | 00 |
| 80 | EVR C EMPH (EE) | EE chroma emphasis adjustment [IC951 ㊷] | 99 | |
| 81 | EVR C EMPH (PB) | PB chroma emphasis adjustment [IC951 ㊷] | 99 | |
| 82 | EVR EMPH (EE) | EE EMPH input level adjustment [IC951 ㊽] | A5 | |
| 83 | EVR EMPH (PB) | PB EMPH input level adjustment [IC951 ㊽] | 90 | |
| 84 | | Not used | | |
| 85 | | | AA | AA |
| 86 | EVR DE-EMPH (PB E) | Hi8 PB DE-EMPH level adjustment [IC951 ㊼] | B0 | |
| 87 | EVR DE-EMPH (PB L) | Normal PB DE-EMPH level adjustment [IC951 ㊼] | A2 | |
| 88 | | | 00 | 00 |
| 89 | | | 00 | 00 |
| 8A | | | 00 | 00 |
| 8B | | | 48 | 48 |
| 8C | EVR AUDIO MATRIX (EE) | EE matrix adjustment [IC951 ㉓] | AF | |
| 8D | EVR AUDIO MATRIX (PB) | PB matrix adjustment [IC951 ㉓] | AF | |
| 8E | EVR 1.7 MHz DEV | 1.7 MHz deviation adjustment [IC951 ㉖] | AF | |
| 8F | EVR 1.5 MHz DEV | 1.5 MHz deviation adjustment [IC951 ㉗] | AF | |
| 90 | | | 60 | 60 |
| 91 to D3 | | | | |
| D4 | CCD FLAW PATTERN | CCDimager correction data (for backup)<br>※ Refer "CCD Imager Correction Data Writing" of Camera Section Adjustments | | |
| D5 | CCD FLAW DATA | | | |
| D6 | CCD FLAW DATA | | | |
| D7 | CCD FLAW DATA | | | |
| D8 | CCD FLAW DATA | | | |
| D9 | CCD FLAW DATA | | | |
| DA | CCD FLAW DATA | | | |
| DB | CCD FLAW DATA | | | |
| DC | CCD FLAW DATA | | | |
| DD | CCD FLAW DATA | | | |
| DE | CCD FLAW DATA | | | |
| DF | CCD FLAW DATA | | | |

Table 7-3-3. (4)

| Address | Name | Function<br>[ ] contains the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| E0 | CCD FLAW DATA | CCDimager correction data (for backup)<br>※ Refer "CCD Imager Correction Data Writing" of Camera Section Adjustments | | |
| E1 | CCD FLAW DATA | | | |
| E2 | CCD FLAW DATA | | | |
| E3 | CCD FLAW DATA | | | |
| E4 | EMERGENCY LAST CODE | Last emergency code | 00 | |
| E5 | EMERGENCY LAST MODE | Last emergency mode | 00 | |
| E6 | | N.C. | 00 | |
| E7 | | N.C. | 00 | |
| E8 | EMERGENCY 2ND CODE | 2nd emergency code | 00 | |
| E9 | EMERGENCY 2ND MODE | 2nd emergency mode | 00 | |
| EA | | N.C. | 00 | |
| EB | | N.C. | 00 | |
| EC | EMERGENCY 1ST CODE | 1st emergency code | 00 | |
| ED | EMERGENCY 1ST MODE | 1st emergency mode | 00 | |
| EE | | N.C. | 00 | |
| EF | | N.C. | 00 | |

Table 7-3-3. (5)

## 3-2. POWER SYSTEM ADJUSTMENTS

### 1. Oscillator Frequency Check (DD board)

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |
| Measurement Point | Q905 collector |
| Measuring Instrument | Frequency counter |
| Specified Value | 500 ± 50 kHz |

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

### 2. Power Voltage Check (DD board)

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |
| Measuring Instrument | Digital voltmeter |
| D5V check | |
| Measurement Point | Pin ㉙ of CN901 |
| Specified Value | 4.9 ± 0.1 Vdc |
| EVF5V check | |
| Measurement Point | Pin ㊴ of CN901 |
| Specified Value | 4.9 ± 0.1 Vdc |
| VID 5V check | |
| Measurement Point | Pins ㉓ and ㉔ of CN901 |
| Specified Value | 4.9 ± 0.1 Vdc |
| AU 5V check | |
| Measurement Point | Pin ㉟ of CN901 |
| Specified Value | 4.9 ± 0.1 Vdc |
| RP 5V check | |
| Measurement Point | Pin ⑳ of CN901 |
| Specified Value | 4.9 ± 0.1 Vdc |
| CAM5V check | |
| Measurement Point | Pins ㉕ and ㉖ of CN901 |
| Specified Value | 4.85 ± 0.1 Vdc |
| SS 3.6V check | |
| Measurement Point | Pin ㉝ of CN901 |
| Specified Value | 3.6 ± 0.1 Vdc |
| D3.6V check | |
| Measurement Point | Pins ㉑ and ㉒ of CN901 |
| Specified Value | 3.6 ± 0.1 Vdc |
| CAM 15V check | |
| Measurement Point | Pin ㉗ of CN901 |
| Specified Value | 15 ± 0.3 Vdc |
| CAM –8.5V check | |
| Measurement Point | Pin ㉛ of CN901 |
| Specified Value | $-8.5^{+0.25}_{-0.4}$ Vdc |
| MT 5V check | |
| Measurement Point | Pins ⑨, ⑱ and ⑲ of CN901 |
| Specified Value | 5.0 ± 0.1 Vdc |

## 3-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

### 1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "3-1-8. Service Mode".

| | |
|---|---|
| Mode | E-E |
| Signal | Arbitrary |
| Adjustment Page | D |
| Adjustment Address | 00 to 90, [B0 to BB], (D4 to EF) |

[ ] : CCD-TR70/TR80

Input method:

1) Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)

## 2. Battery End Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

| Mode | Camera record |
|---|---|
| Signal | Arbitrary |
| Measurement Point | LCD display of the adjusting remote control unit |
| Measuring Instrument | |
| Adjustment Page | D |
| Specified Value | 06 (BATT END)<br>07 (BATT PRE-END)<br>08 (BATT LOW)<br>09 (BATT MIDDLE)<br>0A (BATT HIGH) |

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 7-3-5.

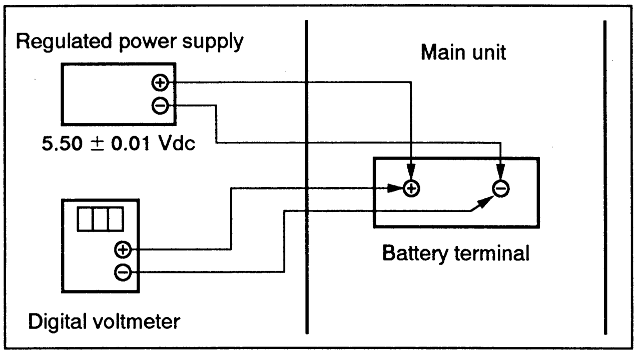


Fig. 7-3-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Page: 1, address: 00, data: 01
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
4) Set data: 01 to page: 2, address: 00.
(Specification of category 01)
5) Select page: 2, address: 47, read the adjusting remote commander display data, and set to D6.
6) Set data D6 to page: D, address: 06, and press the PAUSE button of the adjusting remote commander.
7) Convert D47 to decimal notation, and obtain D47′. (Refer to Table 7-1-4. "Hexadecimal notation–decimal notation conversion table")
8) Calculate D7′, D8′, D9′ and DA′ using following equations (decimal notation calculation).
D7′=D47′+3
D8′=D47′+8
D9′=D47′+14
DA′=D47′+18
9) Convert D7′, D8′, D9′ and DA′ to hexadecimal notation, and obtain D7, D8, D9 and DA.
10) Set data: D7′ to page: D, address: 07, and press the PAUSE button of the adjusting remote commander.
11) Set data: D8′ to page: D, address: 08, and press the PAUSE button.
12) Set data: D9′ to page: D, address: 09, and press the PAUSE button.
13) Set data: DA to page: D, address: 0A, and press the PAUSE button.
14) Perform "Battery Down Check".

### 3. Battery Down Check

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 7-3-5.

Checking method:

Remove the adjusting remote commander, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
4) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.54 ± 0.01 Vdc.
5) Check that the 🔋 mark on the EVF display and the TALLY lamp blinks every second.
6) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
7) Check that the 🔋 mark on the EVF display and the TALLY lamp are blinking faster, the VTR stops and the power supply turns off.

## 3-4. SERVO SYSTEM ADJUSTMENTS

### 1. Switching Position Adjustment (VS board)

Switching timing of video head setting. If deviated in this case causes switching noise or jitter on the played back screen.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For tracking adjustment (WR5-1NP) |
| Measurement Point | CH1: Pin ④ of CN101 (RF SWP)<br>CH2: Pin ③ of CN101 (PB RF) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 04 (SW POSITION) (LOW)<br>05 (SW POSITION) (HIGH) |
| Specified Value | t1=0 ± 10 $\mu$sec |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Set data: 0B to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t1". (Coarse adjustment)
4) Change the data of page: D, address: 04, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.

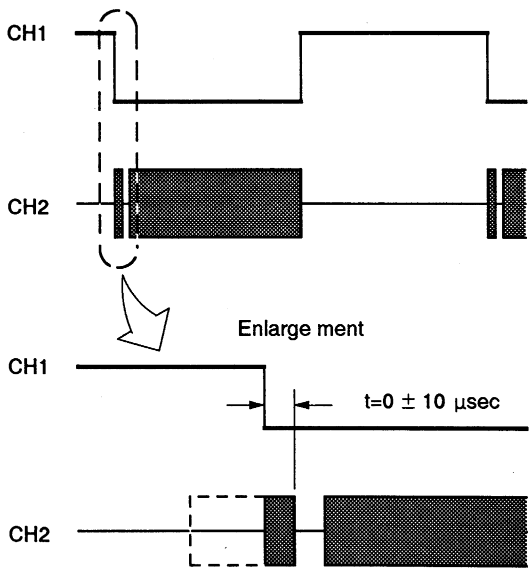


Fig. 7-3-6.

## 3-5. Standard 8 mm VIDEO SYSTEM ADJUSTMENTS (CCD-TR42/TR70/TR72/TR80/TR82/TR430/TR550)

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 7-3-2. and 7-3-3.

### [Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) WHITE CLIP check
8) DARK CLIP check
9) DE EMPH level adjustment
10) PB Y out level adjustment
11) Y FM carrier frequency adjustment
12) Y FM deviation adjustment
13) Chroma emphasis adjustment 1
14) Chroma emphasis adjustment 2
15) Comb filter fine adjustment
16) REC Y level adjustment
17) REC L adjustment
18) REC CHROMA level adjustment
19) REC ATF level check

### 1. Playback Frequency Characteristic Adjustment (VS board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

**Note 1:** The adjusting element for CH2 is shown in parentheses [ ].

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For frequency characteristic adjustment (WR5-6N) |
| Measurement Point | CH1: Pin ③ of CN102 (PB RF)<br>EXT TRIG: Pin ④ of CN102 (RF SWP) |
| Measuring Instrument | Oscilloscope<br>TRIG SLOPE: +, [–] |
| Adjustment Page | D |
| Adjustment Address | 5E (MT 1CH (L)), [63 (MT 2CH (L))] |
| Specified Value | 3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3) |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 05, set data: 1A.
3) Press the PAUSE button of the adjusting remote commander.
4) Change the data of address: 5E [63] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   **Note 2:** After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.
5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote commander.

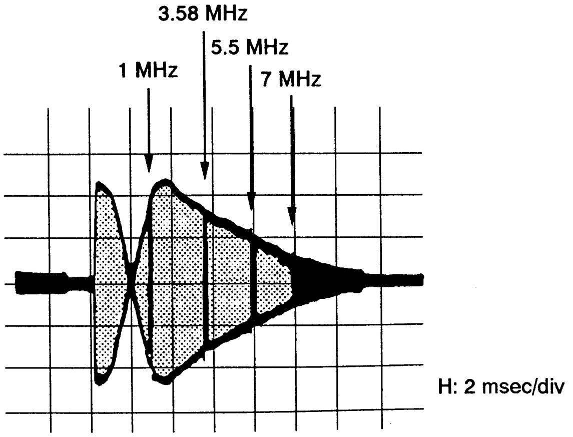


Fig. 7-3-7.

## 2. Flying Erase Check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | Arbitrary |
| Measurement Point | Pin ⑫ of CN101 (FE (X)) |
| Measuring Instrument | Oscilloscope and frequency counter |
| Specified Value | Frequency: 8.0 ± 0.5 MHz<br>Voltage: 6.0 ± 1 Vp-p (ME tape)<br>Above 7.0 Vp-p (MP tape) |

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

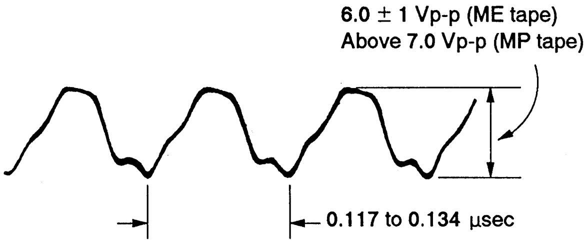


Fig. 7-3-8.

## 3. VXO Oscillation Frequency Check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | Color bar |
| Measurement Point | Pin (61) of IC201 |
| Measuring Instrument | Frequency counter |
| Specified Value | 3579545 ± 50 Hz |

**Note:** Connect the frequency counter via a high impedance (approximately 10 MΩ ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin (61) of IC201 is 3579545 ± 50 Hz.

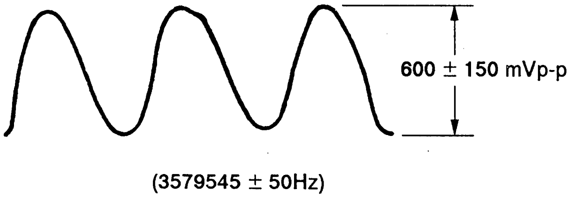


Fig. 7-3-9.

## 4. SYNC AGC Level Adjustment (VS board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

| | |
|---|---|
| Mode | Camera record |
| Signal | Color bar (Camera input) Note 1 |
| Measurement Point | Pin ⑥ of CN201 (VIDEO I/O) Note 2 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 70 (SYNC AGC) |
| Specified Value | A=1.00 ± 0.025V |

**Note 1:** The chroma signal input is not required.

**Note 2:** Terminate the video out terminal at 75Ω . 75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

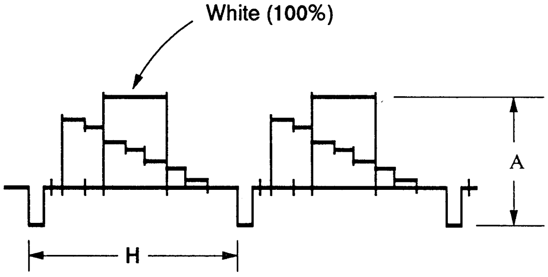


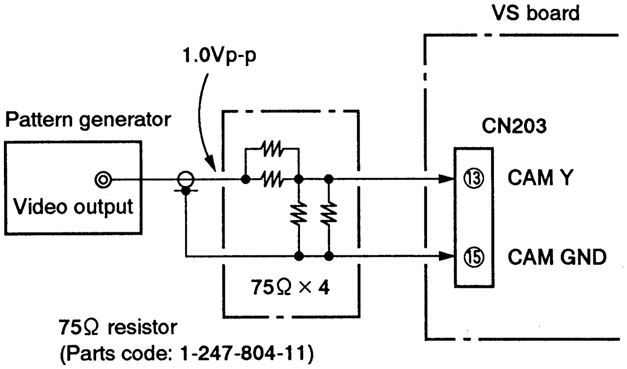
Fig. 7-3-10.

### 5. Comb Filter Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter.

| | |
|---|---|
| Mode | Camera record |
| Signal | Color bar (Note 1) |
| Measurement Point | Pin ⑭ of IC201 (Y COMB OUT) |
| Measuring Instrument | Oscilloscope |
| Adjusting Element | RV202 (PHASE) |
| Adjustment Page | D |
| Adjustment Address | 71 (COMB ADJ) |
| Specified Value | Residual chroma component (A) is minimum. |

**Note 1:** Connect the pattern generator as shown in the following figure.


VS board
1.0Vp-p
Pattern generator
Video output
CN203
⑬ CAM Y
⑮ CAM GND
75Ω × 4
75Ω resistor
(Parts code: 1-247-804-11)

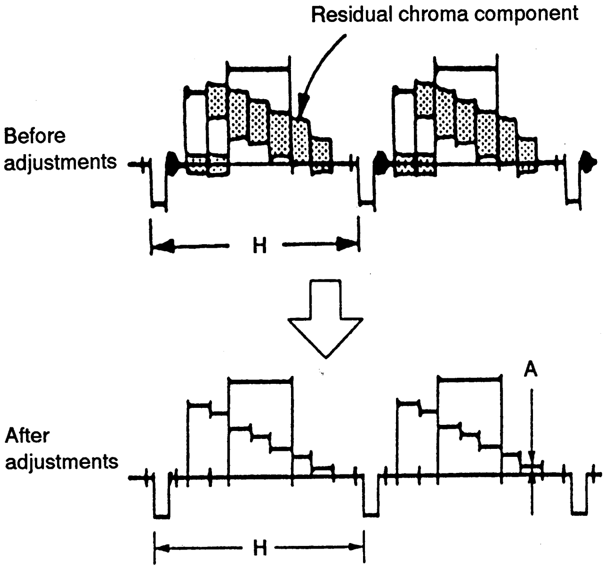

Residual chroma component
Before adjustments
H
A
After adjustments
H

Fig. 7-3-11.

Adjusting method:
1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Page: 1, address: 00, data: 01
4) Set data: 00 to page: 2, address: 00.
   (Specification of category 00)
5) Set data: 04 to page: 2, address: B0.
6) After memorizing the data of address: 9A of page: 2, set data: 10 to the address. (TEST A mode setting)
7) After memorizing the data of address: 9D of page: 2, set data: 30 to the address. (TEST B mode setting)
8) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
9) Adjust RV202 so that the residual chroma component becames minimum.
10) Repeat 8) and 9).
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments
1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.
   (Release of TEST A, B mode)

### 6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

| | |
|---|---|
| Mode | Camera record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑤ of IC201 (EMPH IN)<br>or Pin ⑤ of IC205 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 82 (EMPH (EE)) |
| Specified Value | A=0.50 ± 0.01V |

**Note 1:** The chroma signal input is not required.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

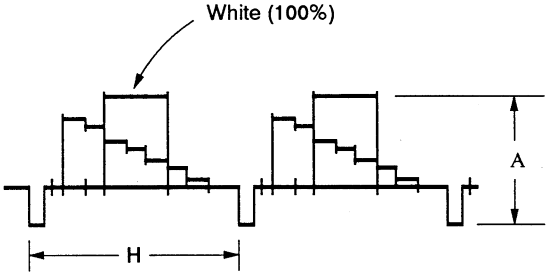


Fig. 7-3-12.

### 7. WHITE CLIP check (VS board)

| | |
|---|---|
| Mode | Camera record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | MP tape: 7B (W CLIP (SP L MP))<br>ME tape: 7A (W CLIP (SP L ME)) |
| Specified Value | A=220 ± 10% |

**Note 1:** The data of address 7B and 7A are fixed value. (The data of address 7B and 7A are "86".)

**Note 2:** The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00. (Specification of category 00)
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address. (TEST 2 mode setting)
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0. (Release of TEST 2 mode)

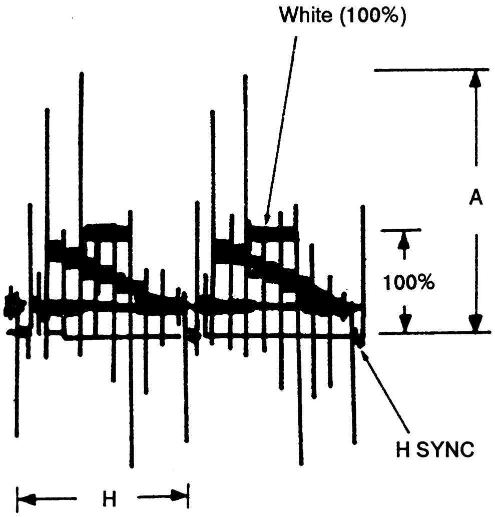


Fig. 7-3-13.

## 8. DARK CLIP check (VS board)

| | |
|---|---|
| Mode | Camera record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 24 (D CLIP 1)<br>25 (D CLIP 2) |
| Specified Value | A=100 ± 10% |

**Note 1:** The data of address 24 and 25 are fixed value. (The data of address 24 and 25 are "00".)

**Note 2:** The chroma signal input is not required.

**Note 3:** The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 tc page: 2, address: 00. (Specification of category 00)
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address. (TEST 2 mode setting)
5) Check that the dark clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0. (Release of TEST 2 mode)

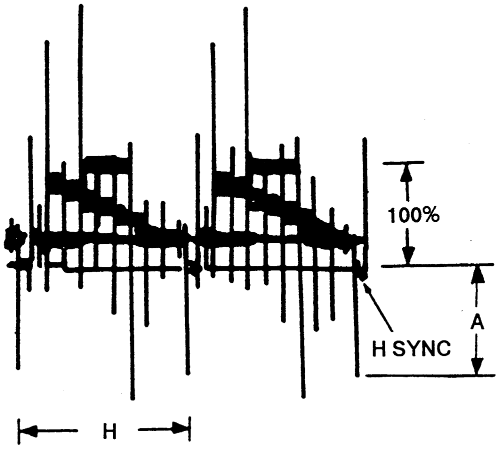


Fig. 7-3-14.

## 9. DE EMPH Level Adjustment (VS board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking operations<br>Color bar section (WR5-5NSP) |
| Measurement Point | Pin ㉓ of IC201 (DL IN 1) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 87 (DE-EMPH (PB L)) |
| Specified Value | A=0.54 ± 0.01V |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Perform "PB Y OUT Level Adjustment".

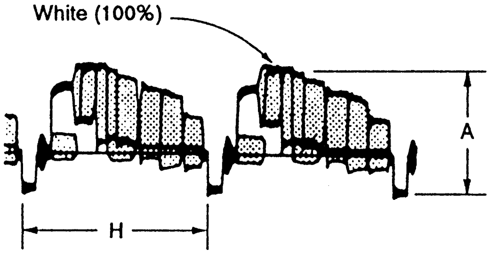


Fig. 7-3-15.

## 10. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Color bar section |
| Measurement Point | Pin ⑥ of CN201 (VIDEO I/O) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 83 (EMPH (PB)) |
| Specified Value | A=1.0 ± 0.05V |

**Note 1:** Terminate the video output/output terminal at 75Ω.
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

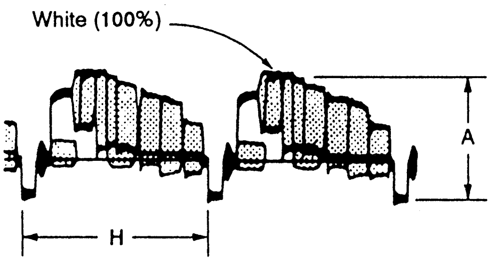


Fig. 7-3-16.

## 11. Y FM Carrier Frequency Adjustment (VS board)

FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

| Mode | Record |
|---|---|
| Signal | No signal (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) (JL209) |
| Measuring Instrument | Frequency counter |
| Adjustment Page | D |
| Adjustment Address | 75 (CARRIER (L)) |
| Specified Value | 4.385 ± 0.01 MHz |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

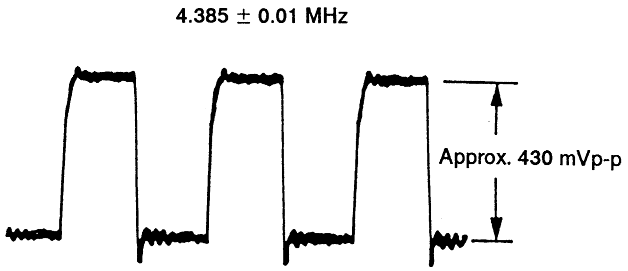


Fig. 7-3-17.

## 12. Y FM Deviation Adjustment (VS board)

FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

| | |
|---|---|
| Mode | Record and playback |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ㉘ of IC201 (DL IN 1) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 77 (DEVIATION (L)) |
| Specified Value | A=0.54 ± 0.01V |

**Note 1:** Check that "Emphasis Input Level Adjustment", have been completed.

**Note 2:** The chroma signal input is not required.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.54 ± 0.01V
5) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 2) to 4).

| Playback signal level | Changing the data |
|---|---|
| When smaller than the specified value | Increase |
| When bigger than the specified value | Decrease |

6) Press the PAUSE button of the adjusting remote commander.
7) Perform "Y FM Carrier Frequency Adjustment".

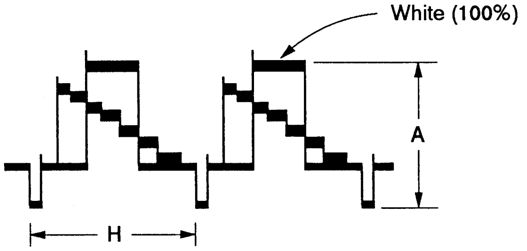


Fig. 7-3-18.

## 13. Chroma Emphasis Adjustment 1 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑧ of IC201 (REC C OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 80 (C EMPH (EE))<br>81 (C EMPH (PB)) |
| Specified Value | Minimum fo component |

Adjusting method:

1) Set to the record mode.
2) Page: 1, address: 00, data: 01
3) Set data: 00 to page: 2, address: 00.
   (Specification of category 00)
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address. (TEST 1 mode setting)
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (yellow section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.
   (Release of TEST 1 mode)

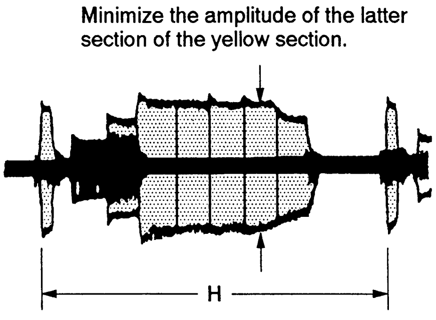

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 7-3-19.

## 14. Chroma Emphasis Adjustment 2 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP) Color bar section |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | D |
| Adjustment Address | 81 (C EMPH (PB))<br>80 (C EMPH (EE)) |
| Specified Value | The path from the blue luminance point to black luminance point should be a straight line. |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

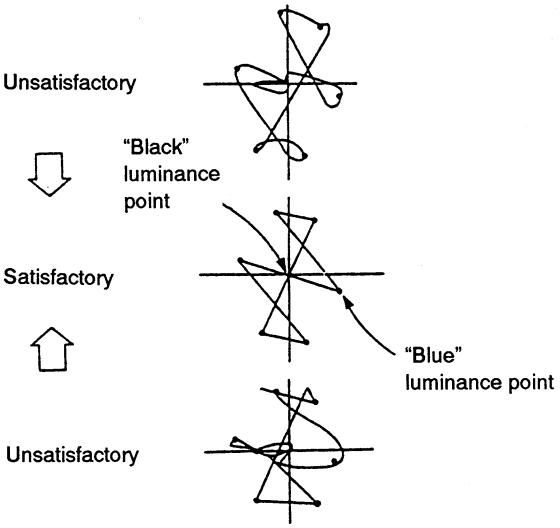


Fig. 7-3-20.

## 15. Comb Filter Fine Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP) Color bar section |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjusting Element | RV202 (PHASE) |
| Adjustment Page | D |
| Adjustment Address | 71 (COMB ADJ) |
| Specified Value | Minimum color luminance point movement when the "Edit" switch is turned on/off |

**Note 1:** Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Minimize the movements of the color luminance point when the edit is on/off with RV202.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

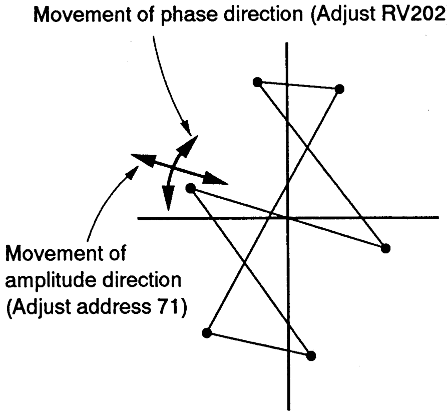

Movement of phase direction (Adjust RV202)
Movement of amplitude direction (Adjust address 71)

Fig. 7-3-21.

## 16. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope<br>Board width limit: 20 MHz |
| Adjustment Page | D |
| Adjustment Address | 47 (REC Y 2CH (L MP))<br>43 (REC Y 1CH (L MP))<br>46 (REC Y 2CH (L ME))<br>42 (REC Y 1CH (L ME)) |
| Specified Value | A=145 ± 5 mVp-p |

**Note 1:** Use a normal MP type tape.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) After memorizing the data of address: 3B of page: D, set data: FF to the address.
3) Set data: FF to address: 43 of page: D, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 47, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Set data to address: 42, 43, 46 of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

| Address | Data |
|---|---|
| 42 | Same data as address: 47 |
| 43 | Same data as address: 47 |
| 46 | Same data as address: 47 |

7) Set the data memorized at step 2) to address: 3B of page: D and press the PAUSE button of the adjusting remote commander.

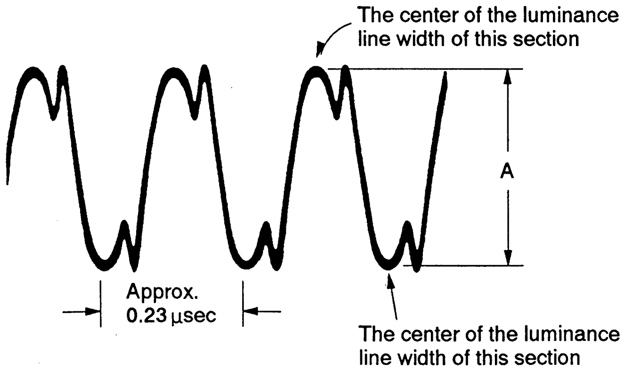

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 7-3-22.

## 17. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

| | |
|---|---|
| Mode | Record |
| Signal | No signal (VIDEO input) |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 3B (REC LOW 2 (MP))<br>39 (REC LOW 1 (MP))<br>3A (REC LOW 2 (ME))<br>38 (REC LOW 1 (ME)) |
| Specified Value | A=6.7 ± 1.0 mVp-p |

**Note 1:** Use a MP type tape.

**Note 2:** AU board is required for this adjustment.

**Note 3:** For CCD-TR72/TR80/TR430, do not insert any plug into the right audio input terminal.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts cord: 1-101-004-00)

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 3B, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3B, and set to D3B.
5) Set data: D3B to address: 39 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3B to decimal notation, and obtain D3B′.
   (Refer to Table 7-1-3. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3A′ using following equation (decimal notation calculation).
   D3A′=D3B′–7
9) Convert D3A′ to hexadecimal notation, and obtain D3A.
10) Set data: D3A to address: 3A of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3A to address: 38 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

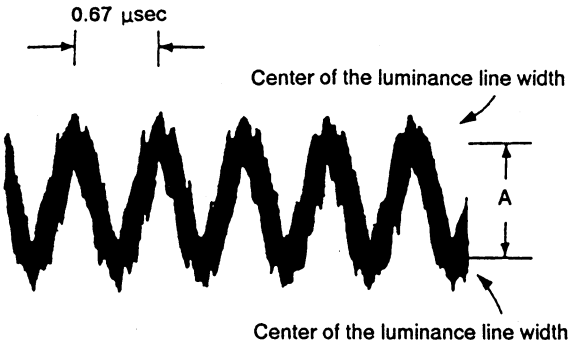

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 7-3-23.

### 18. REC CHROMA Level Adjustment (VS board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (VIDEO input) |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 33 (REC C (SP L MP))<br>32 (REC C (SP L ME))<br>37 (REC C (LP L MP))<br>36 (REC C (LP L ME)) |
| Specified Value | A=29 ± 3 mVp-p |

**Note 1:** Use a MP type tape.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (1-101-004-00)
3) Disconnect AU board.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 33, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 33, and set to D33.
5) Set data: D33 to address: 32 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Set data: D33 to address: 36 of page D.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: D33 to address: 37 of page D.
10) Press the PAUSE button of the adjusting remote commander.

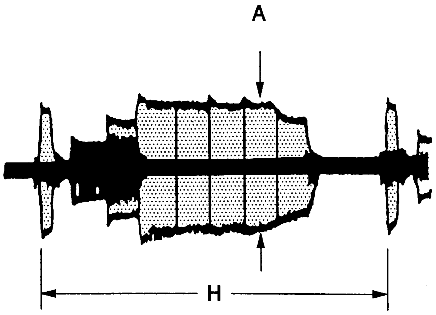


Fig. 7-3-24.

### 19. REC ATF Level Check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=6.4 ± 1.5 mVp-p |

**Note 1:** Use a MP type tape.

Connection:
1) Connect Emitter of Q113 and GND with a jumper wire.
2) Disconnect AU board.

Adjusting method:
1) Check that the REC ATF signal level (A) satisfise the specified value.

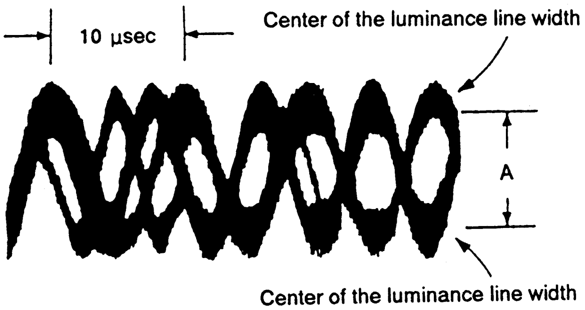


Fig. 7-3-25.

## 3-6. Hi8 VIDEO SYSTEM ADJUSTMENTS (CCD-TR400/TR750)

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 7-3-2. and 7-3-3.

**[Adjusting procedure]**

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) WHITE CLIP check
8) DARK CLIP check
9) DE EMPH level adjustment
10) PB Y out level adjustment
11) Normal mode Y FM carrier frequency adjustment
12) Normal mode Y FM deviation adjustment
13) Hi8 mode Y FM carrier frequency adjustment
14) Hi8 mode Y FM deviation adjustment
15) Chroma emphasis adjustment 1
16) Chroma emphasis adjustment 2
17) Comb filter fine adjustment
18) REC Y level adjustment
19) REC L adjustment
20) REC CHROMA level adjustment
21) REC ATF level check

## 1. Playback Frequency Characteristic Adjustment (VS board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

**Note 1:** The adjusting element for CH2 is shown in parentheses [ ].

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For frequency characteristic adjustment (WR5-7NE) |
| Measurement Point | CH1: Pin ③ of CN102 (PB RF)<br>EXT TRIG: Pin ④ of CN102 (RF SWP) |
| Measuring Instrument | Oscilloscope<br>TRIG SLOPE: +, [–] |
| Adjustment Page | D |
| Adjustment Address | 5A (MT 1CH (SP E ME))<br>5B (MT 1CH (SP E MP))<br>5C (MT 1CH (LP E ME))<br>5D (MT 1CH (LP E MP))<br>5E (MT 1CH (L))<br>[5F (MT 2CH (SP E ME))<br>60 (MT 2CH (SP E MP))<br>61 (MT 2CH (LP E ME))<br>62 (MT 2CH (LP E MP))<br>63 (MT 2CH (L))] |
| Specified Value | 4.5 MHz level: 8.5 MHz level= 3: (2 ± 0.2) |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Press the PAUSE button of the adjusting remote commander.
3) Change the data of address: 5A [5F] of page D, and adjust the level ratio of 4.5 MHz and 8.5 MHz of PB RF output waveform to the specified value.

   **Note 2:** After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.
4) Read the data of page: D, address: 5A, and set to D5A.
5) Read the data of page: D, address: 5F, and set to D5F.
6) Set data to address: 5B to 5E and 60 to 63 of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

| Address | Data |
|---|---|
| 5B | D5A |
| 5C | D5A |
| 5D | D5A |
| 5E | D5A+8 |
| 60 | D5F |
| 61 | D5F |
| 62 | D5F |
| 63 | D5F+8 |

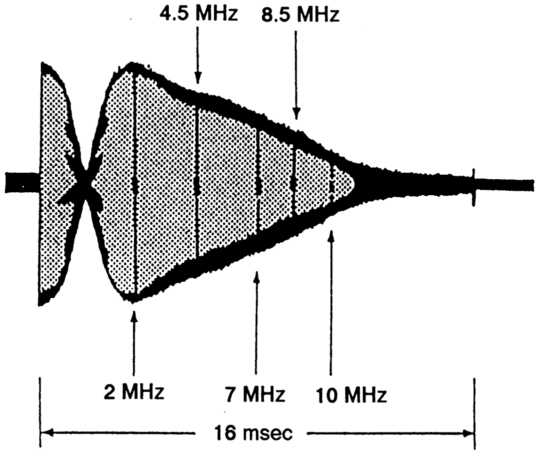


Fig. 7-3-26.

### 2. Flying Erase Check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | Arbitrary |
| Measurement Point | Pin ⑫ of CN101 (FE (X)) |
| Measuring Instrument | Oscilloscope and frequency counter |
| Specified Value | Frequency: 8.0 ± 0.5 MHz<br>Voltage: 6.0 ± 1 Vp-p (ME tape)<br>Above 7.0 Vp-p (MP tape) |

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

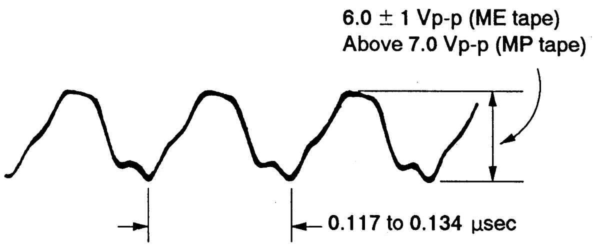


Fig. 7-3-27.

### 3. VXO Oscillation Frequency Check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | Color bar |
| Measurement Point | Pin (61) of IC201 |
| Measuring Instrument | Frequency counter |
| Specified Value | 3579545 ± 50 Hz |

**Note:** Connect the frequency counter via a high impedance (approximately 10 MΩ ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑥ of IC201 is 3579545 ± 50 Hz.

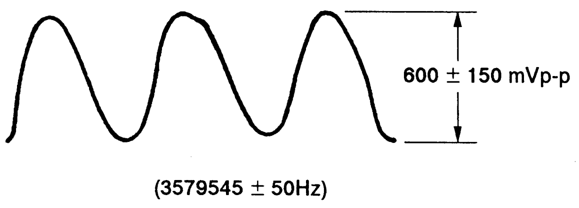


Fig. 7-3-28.

### 4. SYNC AGC Level Adjustment (VS board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (Camera input) Note 1 |
| Measurement Point | Pin ② of CN201 (Y IN/OUT) Note 2 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 70 (SYNC AGC) |
| Specified Value | A=1.00 ± 0.025V |

**Note 1:** The chroma signal input is not required.

**Note 2:** Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

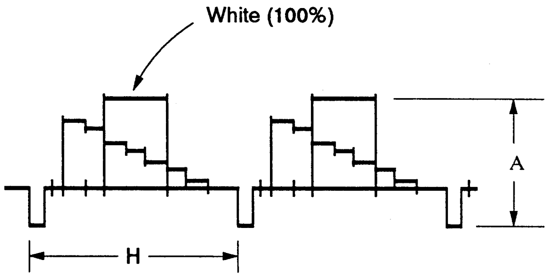


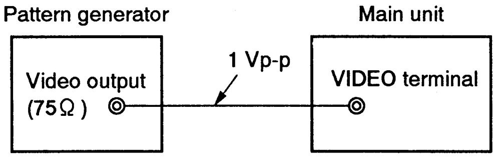
Fig. 7-3-29.

## 5. Comb Filter Adjustment (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (Note 1) |
| Measurement Point | Pin ⑭ of IC201 (Y COMB OUT) |
| Measuring Instrument | Oscilloscope |
| Adjusting Element | RV202 (PHASE) |
| Adjustment Page | D |
| Adjustment Address | 71 (COMB ADJ) |
| Specified Value | Residual chroma component (A) is minimum. |

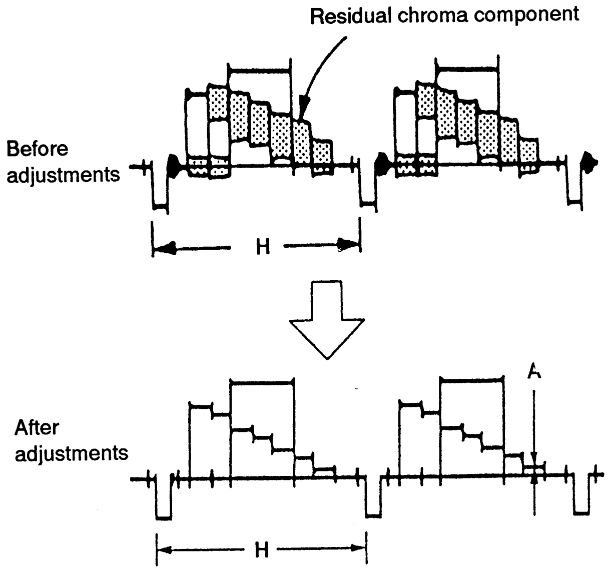
**Note 1:** Connect the pattern generator as shown in the following figure.

**Note 2:** Connect Pin ㉔ of IC251 (INPUT SEL) and Pin ⑨ of IC251 (Vcc) with a jumper wire.



Pattern generator
Main unit
Video output (75Ω) ◎
1 Vp-p
VIDEO terminal ◎

**Note:** The TV monitor cannot be connected. Use the view finder to monitor.



Residual chroma component
Before adjustments
H
After adjustments
A
H

Fig. 7-3-30.

Adjusting method:

1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Page: 1, address: 00, data: 01
4) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
5) Adjust RV202 so that the residual chroma component becames minimum.
6) Repeat 4) and 5).
7) Press the PAUSE button of the adjusting remote commander.

## 6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑤ of IC201 (EMPH IN)<br>or Pin ⑤ of IC205 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 82 (EMPH (EE)) |
| Specified Value | A=0.50 ± 0.01V |

**Note 1:** The chroma signal input is not required.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

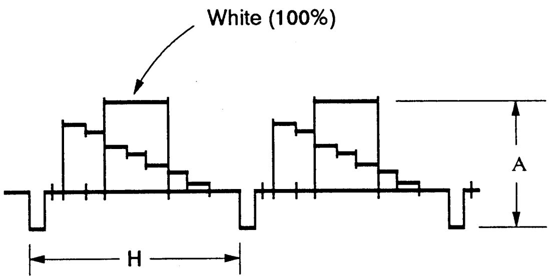


Fig. 7-3-31.

## 7. WHITE CLIP check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | Hi8 mode ME tape:<br>78 (W CLIP (SP E ME))<br>Hi8 mode Hi8 MP tape:<br>79 (W CLIP (SP E MP))<br>Normal mode MP tape:<br>7B (W CLIP (SP L MP)) |
| Specified Value | Hi8 mode ME tape:<br>A=195 ± 10%<br>Hi8 mode Hi8 MP tape:<br>A=190 ± 10%<br>Normal mode MP tape:<br>A=220 ± 10% |

**Note 1:** The data of address 78 to 7B are fixed value.

| Address | Data |
|---|---|
| 78 | 59 |
| 79 | 53 |
| 7A | 7B |
| 7B | 7B |

**Note 2:** The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
   (Specification of category 00)
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address. (TEST 2 mode setting)
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.
   (Release of TEST 2 mode)

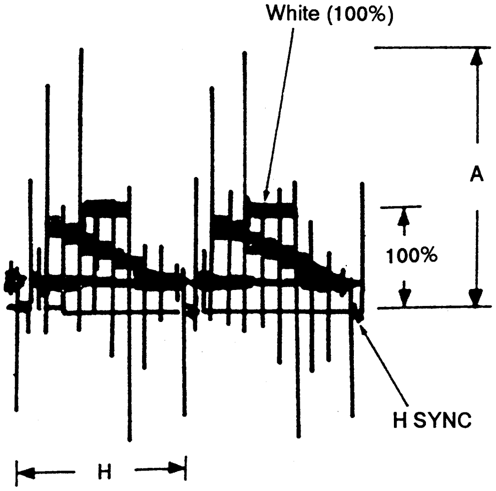


Fig. 7-3-32.

## 8. DARK CLIP check (VS board)

| Mode | Record |
|---|---|
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 24 (D CLIP 1)<br>25 (D CLIP 2) |
| Specified Value | Hi8 mode ME tape:<br>A=85 ± 10%<br>Hi8 mode Hi8 MP tape:<br>A=80 ± 10%<br>Normal mode MP tape:<br>A=100 ± 10% |

**Note 1:** The data of address 24 and 25 are fixed value. (The data of address 24 and 25 are "00".)

**Note 2:** The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00. (Specification of category 00)
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address. (TEST 2 mode setting)
5) Check that the dark clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0. (Release of TEST 2 mode)

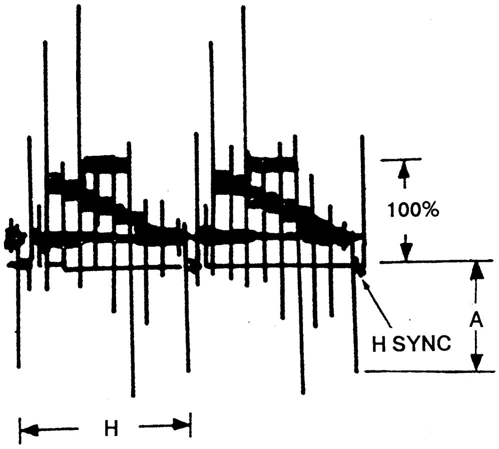


Fig. 7-3-33.

## 9. DE EMPH Level Adjustment (VS board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>Color bar section<br>Normal mode : WR5-5NSP<br>Hi8 mode : WR5-8NSE |
| Measurement Point | Pin ⑰ of IC201 (DL IN 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 86 (DE-EMPH (PB E))<br>87 (DE-EMPH (PB L)) |
| Specified Value | A=0.54 ± 0.01V |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5NSP).
3) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8NSE).
6) Change the data of page: D, address: 86 and adjust so that the Y signal level (A) becames specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Perform "PB Y OUT Level adjustment".

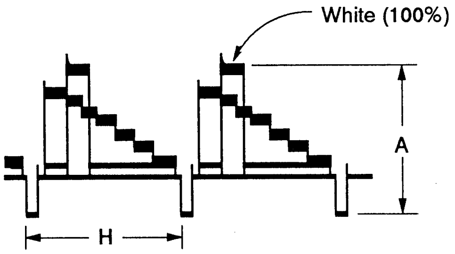


Fig. 7-3-34.

## 10. PB Y OUT Level Adjustment (VS board)

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-8NSE)<br>Color bar section |
| Measurement Point | Pin ② of CN201 (Y IN/OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 83 (EMPH (PB)) |
| Specified Value | A=1.0 ± 0.05V |

**Note 1:** Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
(Part code: 1-247-804-11)

Adjusting method:
1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

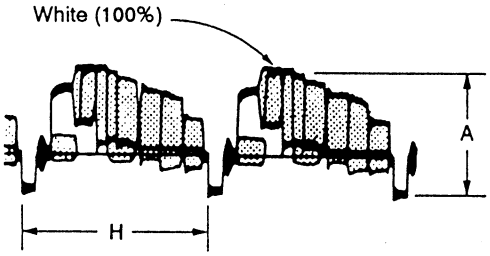


Fig. 7-3-35.

## 11. Normal Mode Y FM Carrier Frequency Adjustment (VS board)

Normal mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

| | |
|---|---|
| Mode | Record |
| Signal | No signal (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) |
| Measuring Instrument | Frequency counter |
| Adjustment Page | D |
| Adjustment Address | 75 (CARRIER (L)) |
| Specified Value | 4.385 ± 0.01 MHz |

Adjusting method:
1) Insert a normal MP type tape.
2) Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

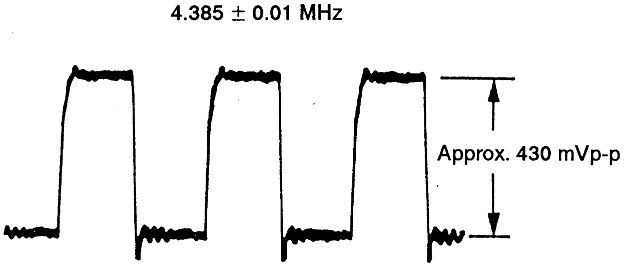


Fig. 7-3-36.

## 12. Normal Mode Y FM Deviation Adjustment (VS board)

Normal mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

| Mode | Record and playback |
|---|---|
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑰ of IC201 (DL IN 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 77 (DEVIATION (L)) |
| Specified Value | A=0.54 ± 0.01V |

**Note 1:** Check that "Emphasis Input Level Adjustment", have been completed.

**Note 2:** The chroma signal input is not required.

Adjusting method:

1) Insert a normal MP type tape.
2) Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.54 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 3) to 5).

| Playback signal level | Changing the data |
|---|---|
| When smaller than the specified value | Increase |
| When bigger than the specified value | Decrease |

7) Press the PAUSE button of the adjusting remote commander.
8) Perform "Normal Mode Y FM Carrier Frequency Adjustment".

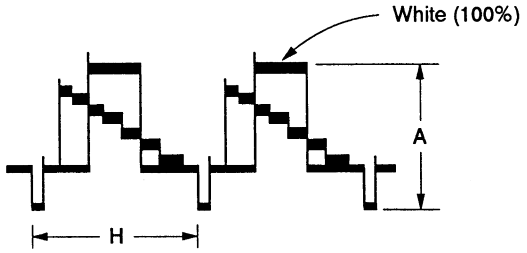


Fig. 7-3-37.

## 13. Hi8 Mode Y FM Carrier Frequency Adjustment (VS board)

Hi8 mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

| Mode | Record |
|---|---|
| Signal | No signal (CAMERA input) |
| Measurement Point | Pin ㊴ of IC201 (Y RF OUT) |
| Measuring Instrument | Frequency counter |
| Adjustment Page | D |
| Adjustment Address | 74 (CARRIER (E)) |
| Specified Value | 6.000 ± 0.01 MHz |

Adjusting method:

1) Insert a ME type tape.
2) Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 74, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

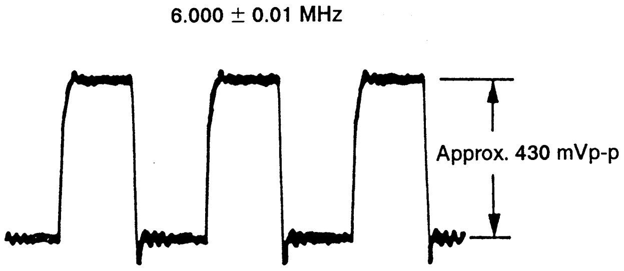


Fig. 7-3-38.

## 14. Hi8 Mode Y FM Deviation Adjustment (VS board)

Hi8 mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

| | |
|---|---|
| Mode | Record and playback |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑰ of IC201 (DL IN 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 76 (DEVIATION (E)) |
| Specified Value | A=0.54 ± 0.01V |

**Note 1:** Check that "Emphasis Input Level Adjustment", have been completed.

**Note 2:** The chroma signal input is not required.

Adjusting method:

1) Insert a ME type tape.
2) Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.54 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 76, and repeat steps 3) to 5).

| Playback signal level | Changing the data |
|---|---|
| When smaller than the specified value | Increase |
| When bigger than the specified value | Decrease |

7) Press the PAUSE button of the adjusting remote commander.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

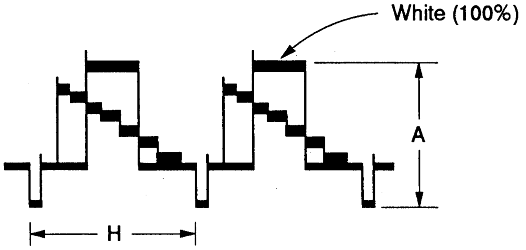


Fig. 7-3-39.

## 15. Chroma Emphasis Adjustment 1 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑧ of IC201 (REC C OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 80 (C EMPH (EE))<br>81 (C EMPH (PB)) |
| Specified Value | Minimum fo component |

Adjusting method:

1) Set to the record mode.
2) Page: 1, address: 00, data: 01
3) Set data: 00 to page: 2, address: 00.
   (Specification of category 00)
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address. (TEST 1 mode setting)
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (yellow section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.
   (Release of TEST 1 mode)

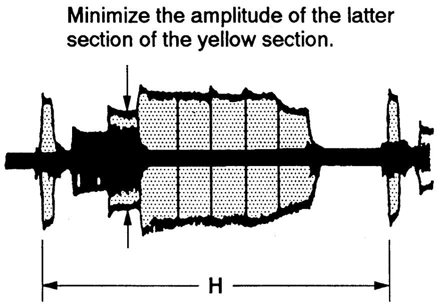

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 7-3-40.

### 16. Chroma Emphasis Adjustment 2 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>Color bar section |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | D |
| Adjustment Address | 81 (C EMPH (PB))<br>80 (C EMPH (EE)) |
| Specified Value | The path from the blue luminance point to black luminance point should be a straight line. |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

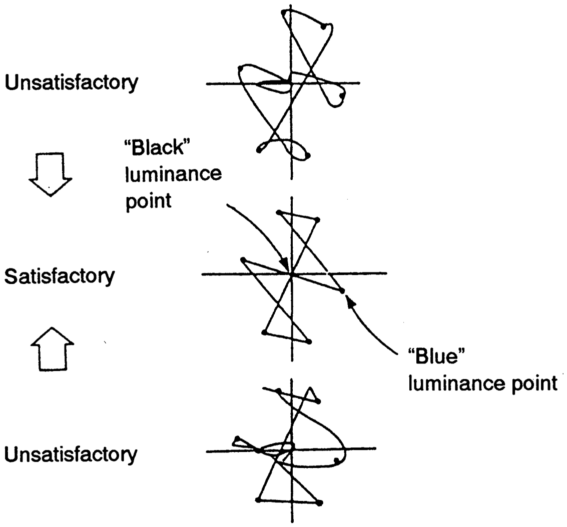


Fig. 7-3-41.

### 17. Comb Filter Fine Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>Color bar section |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjusting Element | RV202 (PHASE) |
| Adjustment Page | D |
| Adjustment Address | 71 (COMB ADJ) |
| Specified Value | Minimum color luminance point movement when the "Edit" switch is turned on/off |

**Note 1:** Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Minimize the movements of the color luminance point when the edit is on/off with RV202.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

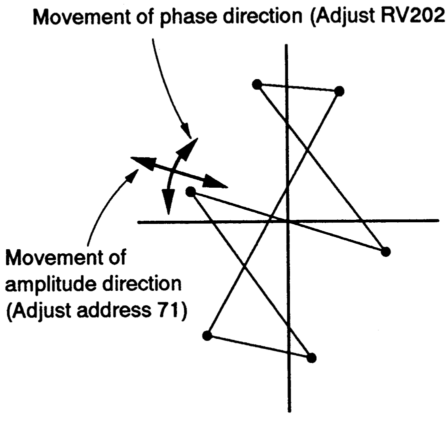

Movement of phase direction (Adjust RV202)
Movement of amplitude direction (Adjust address 71)

Fig. 7-3-42.

## 18. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope<br>Board width limit: 20 MHz |
| Adjustment Page | D |
| Adjustment Address | 44 (REC Y 2CH (E MP))<br>40 (REC Y 1CH (E MP))<br>45 (REC Y 2CH (E ME))<br>41 (REC Y 1CH (E ME))<br>47 (REC Y 2CH (L MP))<br>43 (REC Y 1CH (L MP))<br>46 (REC Y 2CH (L ME))<br>42 (REC Y 1CH (L ME)) |
| Specified Value | A=125 ± 5 mVp-p |

**Note:** Use a ME type tape.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) After memorizing the data of address: 3A of page: D, set data: FF to the address.
3) Set data: FF to page: D, address: 40 and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 44, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data of page: D, address: 44 and set to D44.
7) Convert D44 to decimal notation, and obtain D44′.
   (Refer to Table 7-1-4. "Hexadecimal notation – decimal notataion conversion table")
8) Calculate D45′, D46′ and D47′ using following equations (decimal notation calculation).
   D45′=D44′+ 5
   D46′=D44′+ 4
   D47′=D44′– 3
9) Convert D45′, D46′ and D47′ to hexadecimal notation and obtain D45, D46 and D47.
10) Set data to address: 40, 41, 42, 43, 45, 46 and 47 of page: D as shown in following table.
   (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)
11) Set the data memorized at step 2) to address: 3A of page: D and press the PAUSE button of the adjusting remote commander.

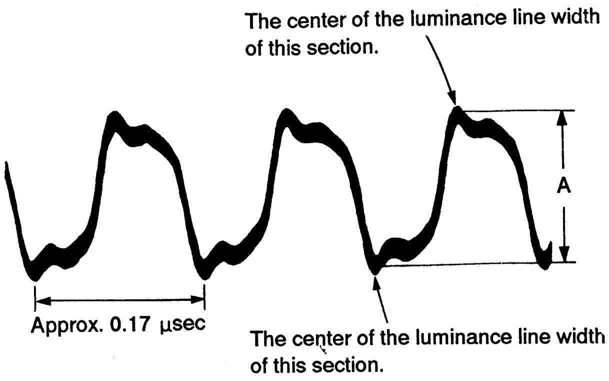

The center of the luminance line width of this section.
A
Approx. 0.17 μsec
The center of the luminance line width of this section.

Fig. 7-3-43.

| Address | Data |
|---|---|
| 40 | D44 |
| 41 | D45 |
| 42 | D46 |
| 43 | D47 |
| 45 | D45 |
| 46 | D46 |
| 47 | D47 |

### 19. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

| | |
|---|---|
| Mode | Record |
| Signal | No signal (VIDEO input) |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 3A (REC LOW 2 (ME))<br>38 (REC LOW 1 (ME))<br>3B (REC LOW 2 (MP))<br>39 (REC LOW 1 (MP)) |
| Specified Value | A=6.8 ± 1.0 mVp-p |

**Note 1:** Use a ME type tape.
**Note 2:** AU board is required for this adjustment.
**Note 3:** Do not insert any plug into the right audio input terminal.

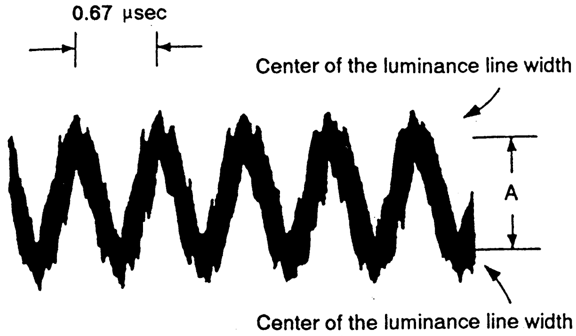

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 7-3-44.

Connection:

1) Disconnect HE-14 board.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 $\mu$F capacitor. (Parts code: 1-101-004-00)

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 3A, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3A, and set to D3A.
5) Set data: D3A to address: 38 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3A to decimal notation, and obtain D3A′. (Refer to Table 7-1-4. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3B′ using following equation (decimal notation calculation).
   D3B′=D3A′+ 10
9) Convert D3B′ to hexadecimal notation, and obtain D3B.
10) Set data: D3B to address: 3B of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3B to address: 39 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

## 20. REC CHROMA Level Adjustment (VS board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

| | |
|---|---|
| Mode | Record |
| Signal | Color bar (CAMERA input) |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 30 (REC C (SP E ME))<br>31 (REC C (SP E MP))<br>32 (REC C (SP L ME))<br>33 (REC C (SP L MP))<br>34 (REC C (LP E ME))<br>35 (REC C (LP E MP))<br>36 (REC C (LP L ME))<br>37 (REC C (LP L MP)) |
| Specified Value | A=28 ± 3 mVp-p |

**Note 1:** Use a ME type tape.

Connection:

1) Disconnect HE-14 board.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts code: 1-101-004-00)
3) Disconnect AU board.

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 30, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 30, and set to D30.
5) Set data to address: 31 to 37 of page: D as shown in following table.

(Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

| Address | Data |
|---|---|
| 31 | D30 |
| 32 | D30 |
| 33 | D30 |
| 34 | D30 |
| 35 | D30 |
| 36 | D30 |
| 37 | D30 |

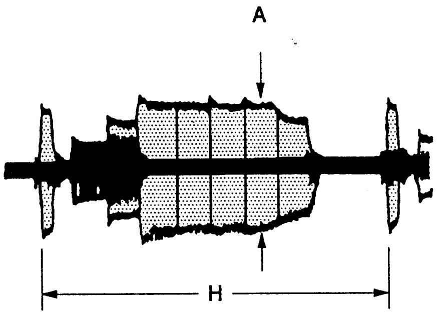


Fig. 7-3-45.

### 21. REC ATF Level Check (VS board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑥ of CN102 (REC 2) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=6.6 ± 1.5 mVp-p |

**Note 1:** Use a ME type tape.

Connection:
1) Disconnect HE-14 board.
2) Disconnect AU board.

Adjusting method:
1) Check that the REC ATF signal level (A) satisfise the specified value.

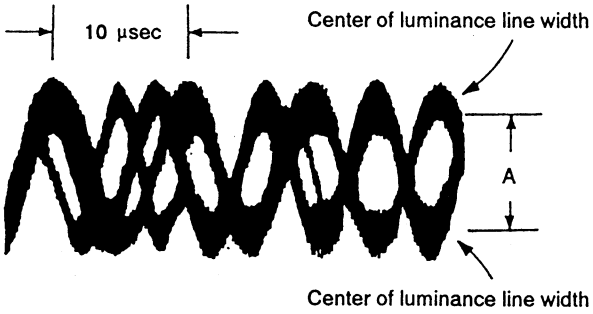


Fig. 7-3-46.

## 3-7. MONAURAL AUDIO SYSTEM ADJUSTMENT (CCD-TR42/TR70/TR82/TR550)

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal

**[Connecting the measuring instruments for the audio]**
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 7-3-47, and perform adjustments with the power switch [player] position.

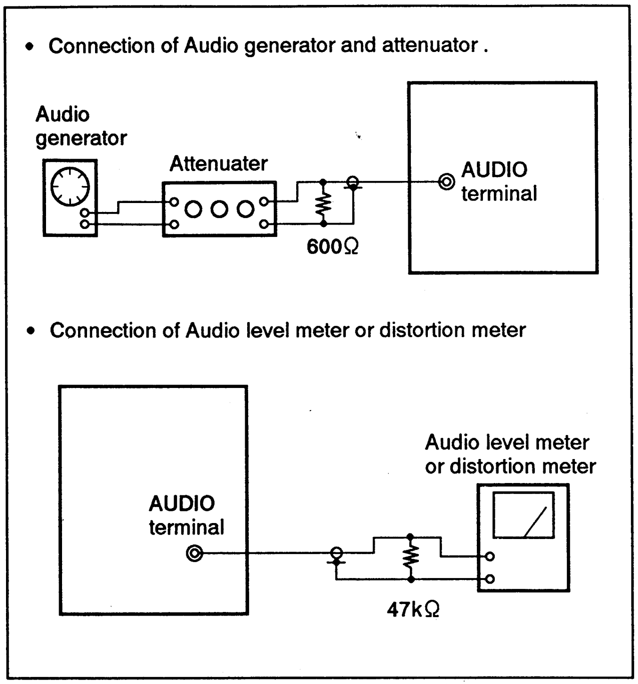

• Connection of Audio generator and attenuator.
Audio generator
Attenuater
600Ω
AUDIO terminal
• Connection of Audio level meter or distortion meter
AUDIO terminal
Audio level meter or distortion meter
47kΩ

Fig. 7-3-47.

**[Adjustment Procedure]**
1) E-E output level check
2) Deviation adjustment
3) Overall level characteristics, distortion check
4) Overall noise level check

## 1. E-E Output Level Check (AU-169 board)

| | |
|---|---|
| Mode | Record |
| Signal | 400 Hz, –7.5 dBs,<br>Audio input terminal |
| Measurement Point | Pin ㊾ of IC1301 |
| Measuring Instrument | Audio level meter (Oscilloscope) |
| Specified Value | $-7.5 \pm 2$ dBs $\left(925^{+240}_{-190}\ \text{mVp-p}\right)$ |

Checking method:
1) Check that the 400 Hz signal level satisfies the specified value.

## 2. Deviation Adjustment

Adjust to the optimum audio FM signal deviation.
If the adjustment is not correct, its playback level will differ from that of other units.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking the operation<br>(WR5-5NSP) |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 8F (1.5 MHz DEV) |
| Specified Value | –7.5 ± 0.5 dBs |

Adjusting method:
1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 8F, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

## 3. Overall Level Characteristic, Distortion Check

| | |
|---|---|
| Mode | Self recording/playback |
| Signal | 400 Hz, –7.5 dBs,<br>Audio input terminal |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter and distortion meter |
| Specified Value | Level: –7.5 ± 2 dBs<br>Distortion rate: Below 0.5% (Note 1) |

**Note:** 1) Value when the following filter is used

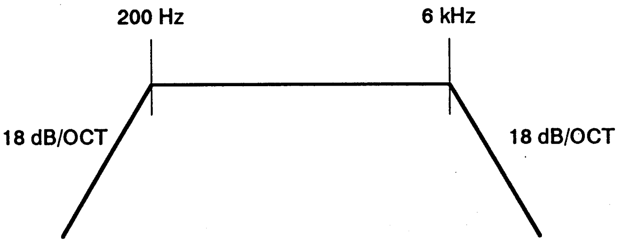


Fig. 7-3-48.

Checking method:
1) Input the 400 Hz, –7.5 dBs signal to the audio input terminal.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2 dBs, and that the distortion rate is below 0.5% (Note 1).

## 4. Overall Noise Level Check

| | |
|---|---|
| Mode | Self recording |
| Signal | No signal: Audio input terminal |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter<br>(Use an IHF-A curve auditory correction filter) |
| Specified Value | Below –65.0 dBs |

Checking method:
1) Insert the shorting plug to the audio input terminal.
2) Record.
3) Remove the shorting plug.
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal is below –65.0 dBs.

## 3-8. STEREO AUDIO SYSTEM ADJUSTMENT (CCD-TR72/TR80/TR400/TR430/TR750)

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.

### [Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 7-3-49, and perform adjustments at the power switch [player] or [video] position.

Set the Hi-Fi SOUND switch in the menu display to the following position unless specified otherwise.

- Stereo position

**Note:** 1) When inputting the audio signal, input the same signal to both L, and R channels, unless specified otherwise.

2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio terminal (right). If the plug is not inserted, the unit will be set into the monaural mode, and correct adjustments cannot be carried out.
(Monaural mode)
During recording ·· REC AFM RF1.7 MHz carrier will not be output.
During playback ·· The L+R signal will be output from the audio terminal (left).

3) The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.

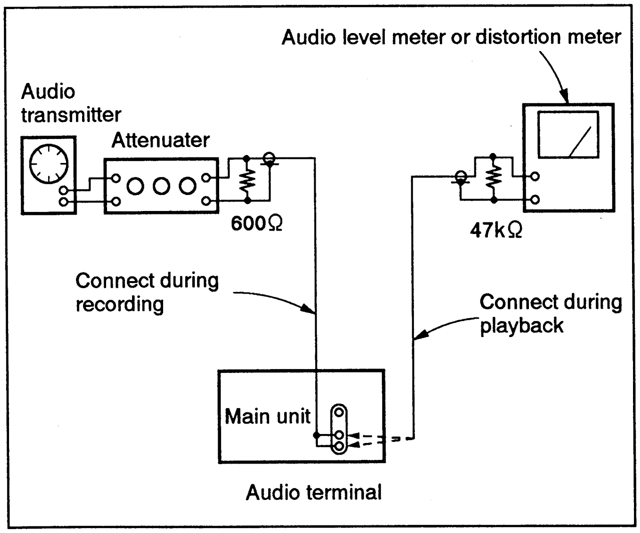


Fig. 7-3-49.

### [Adjustment Procedure]

1) E-E output level check
2) REC matrix L–R adjustment
3) REC matrix L+R check
4) 1.5 MHz deviation adjustment
5) 1.7 MHz deviation adjustment
6) Overall level characteristics, distortion check
7) Separation check
8) Overall noise level check

### 1. E-E Output Level Check (AU-165 board)

| | |
|---|---|
| Mode | Record |
| Signal | 400 Hz, –7.5 dBs audio input terminal right [left] |
| Measurement Point | Pin ㊾ of IC1301 [Pin ㊿ of IC1301] |
| Measuring Instrument | Oscilloscope |
| Specified Value | $925^{+240}_{-190}$ mVp-p (–7.5 ± 2 dBs) |

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

### 2. Matrix L-R Adjustment (AU-165 board)

Adjust the audio matrix. If improper, this causes deteriorated separation (with stereo signal).

| | |
|---|---|
| Mode | Record |
| Signal | 400 Hz, –7.5 dBs<br>Input to both left and right terminals of the audio input terminal |
| Measurement Point | Pin ⑤ of IC1301 |
| Measuring Instrument | Oscilloscope (Use 1:1 probe) |
| Adjustment Page | D |
| Adjustment Address | 8C (AUDIO MATRIX (EE))<br>8D (AUDIO MATRIX (PB)) |
| Specified Value | 0 ± 20 mVp-p |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 8C, and minimize the 400 Hz signal level.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 8C of page: D to address: 8D of page: D.
5) Press the PAUSE button of the adjusting remote commander.

### 3. REC Matrix L+R Check (AU-165 board)

| | |
|---|---|
| Mode | Record |
| Signal | 1. 400 Hz, –7.5 dBs:<br>Audio input terminal left<br>No signal:<br>Audio input terminal right<br>2. No signal:<br>Audio input terminal left<br>400 Hz, –7.5 dBs:<br>Audio input terminal right |
| Measurement Point | Pin ㊹ of IC1301 |
| Measuring Instrument | Oscilloscope |
| Specified Value | The level difference is 0 ± 10 mVp-p when only the left terminal is input and when only the right terminal is input. |

**Note:** When measuring the signal level of pin ㊹ of IC1301, wait for more than 1 minute after signal input before measuring. (To stabilize the AGC)

Adjusting method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Read the 400 Hz signal level of pin ㊹ of IC1301, and take it down. (Approximately 250 mVp-p)
3) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
4) Check that the 400 Hz signal level of pin ㊹ of IC1301 is (the value that was taken down at step 2) ± 10 mVp-p.

### 4. 1.5 MHz Deviation Adjustment

Adjusts the 1.5 MHz AFM signal deviation. If improper, this causes deteriorated separation with Alignment tape (with stereo signal) and the playback level will differ from that of other unit.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape: For checking the operation<br>(WR5-5NSP) |
| Measurement Point | Audio output terminal left or right |
| Measuring Instrument | Oscilloscope, Level meter |
| Adjustment Page | D |
| Adjustment Address | 8F (1.5 MHz DEV) |
| Specified Value | –7.5 ± 0.5 dBs |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 8F, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

### 5. 1.7 MHz Deviation Adjustment

Adjust the 1.7 MHz AFM deviation. If improper, this causes deteriorated separation (with stereo signal).

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>AFM stereo for checking operation<br>(WR5-9NS)<br>Stereo (color bar) section |
| Measurement Point | Audio output terminal right |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 8E (1.7 MHz DEV) |
| Specified Value | Cross talk component is below 30 mVp-p |

Adjusting method:

1) Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 8D, and minimize the cross talk component (400 Hz).
3) Press the PAUSE button of the adjusting remote commander.

## 6. Overall Level Characteristics, Distortion Check

| Mode | Self recording/playback |
|---|---|
| Signal | 400 Hz, –7.5 dBs: Audio input terminal (left) [right]<br>No signal: Audio input terminal (right) [left] |
| Measurement Point | Audio output terminal (left) [right] |
| Measuring Instrument | Audio level meter and distortion meter |
| Specified Value | Level: –7.5 ± 2 dBs<br>Distortion rate: Below 0.8% (Note 2) |

**Note:** 1) The [ ] indicates the measuring point during the right channel check.
2) Value when the 200 kHz to 6 kHz band-path filter is used

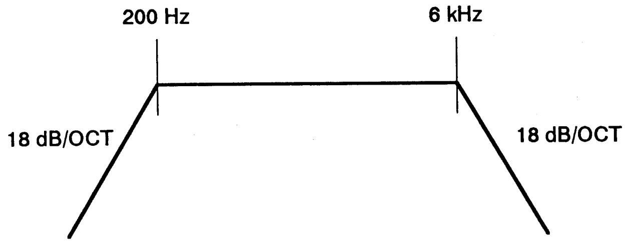


Fig. 7-3-50.

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   **Note:** Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 2 dBs, and that the distortion rate is below 0.8% (Note 2).

## 7. Separation Check

| Mode | Self recording /playback |
|---|---|
| Signal | No signal: Audio input terminal (left) [right]<br>400 Hz, –7.5 dBs: Audio input terminal (right) [left] |
| Measurement Point | Audio output terminal (left) [right] |
| Measuring Instrument | Audio level meter<br>(Use an IHF-A curve auditory correction filter) |
| Specified Value | Below –27.5 dBs |

**Note:** The [ ] indicates the measuring point during the right channel check.

Checking method:

1) Insert a shorting plug into the audio input terminal (left) [right], and input a 1kHz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk level (1 kHz) of the audio output terminal (left) [right] is below –27.5 dBs.

## 8. Overall Noise Level Check

| Mode | Self recording/playback |
|---|---|
| Signal | No signal: Audio input terminal left and right |
| Measurement Point | Audio output terminal (left) [right] |
| Measuring Instrument | Audio level meter<br>(Use an IHF-A curve auditory correction filter) |
| Specified Value | Below –62.5 dBs |

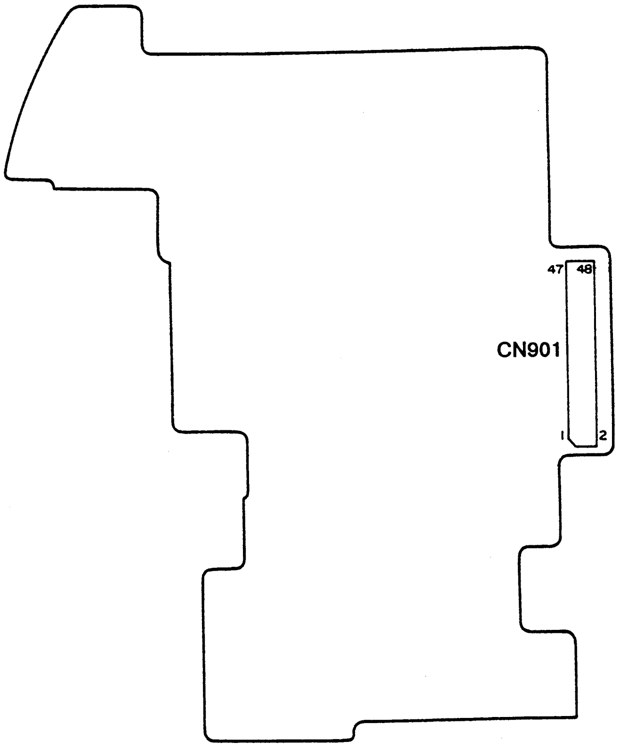
**Note:** The [ ] indicates the measuring point during the right channel check.

Checking method:

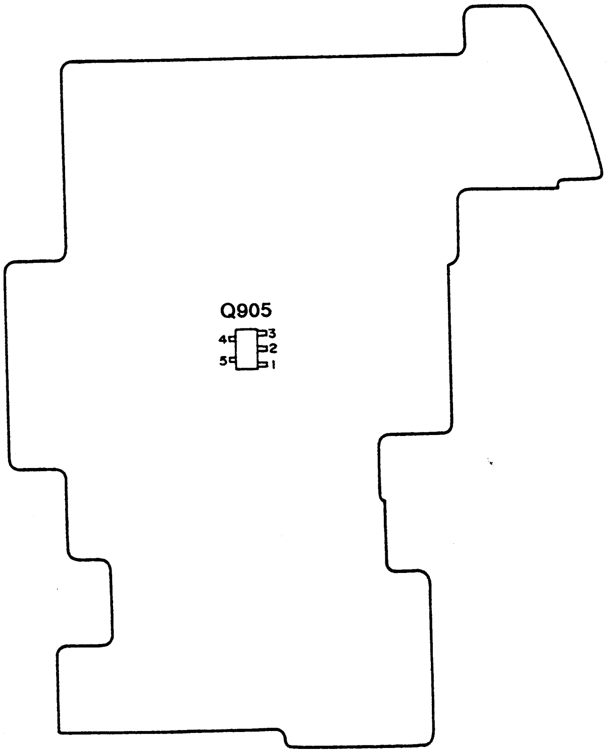
1) Insert the shorting plug to both left and right of the audio input terminals.
2) Record.
3) Remove the shorting plug.
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal (left) [right] is below –62.5 dBs.

## 3-9. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

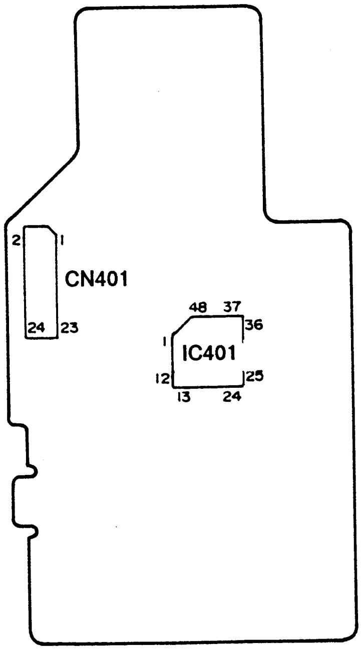
### DD BOARD (CONDUCTOR SIDE)


47
48
CN901
1
2

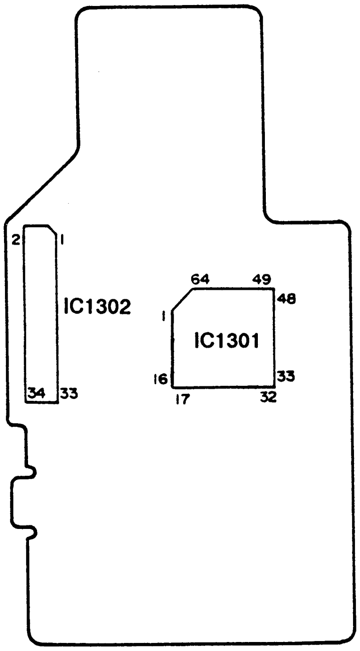
### DD BOARD (COMPONENT SIDE)



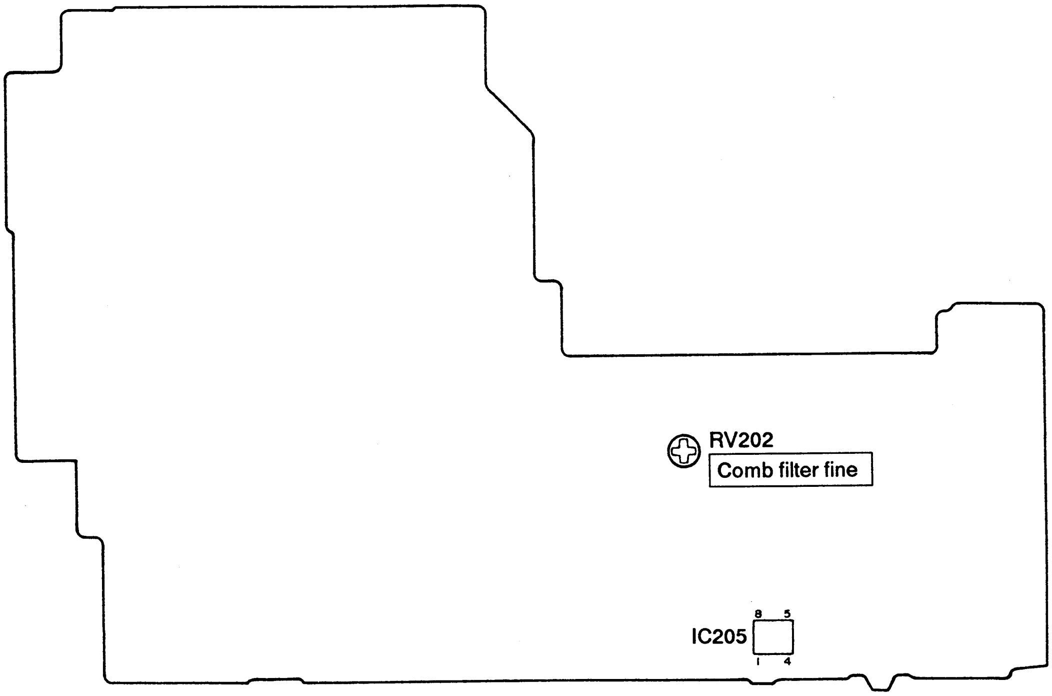
### AU-169 BOARD (COMPONENT SIDE)
### (CCD-TR42/TR70/TR82/TR550)


2
1
CN401
24
23
48
37
36
1
IC401
12
25
13
24

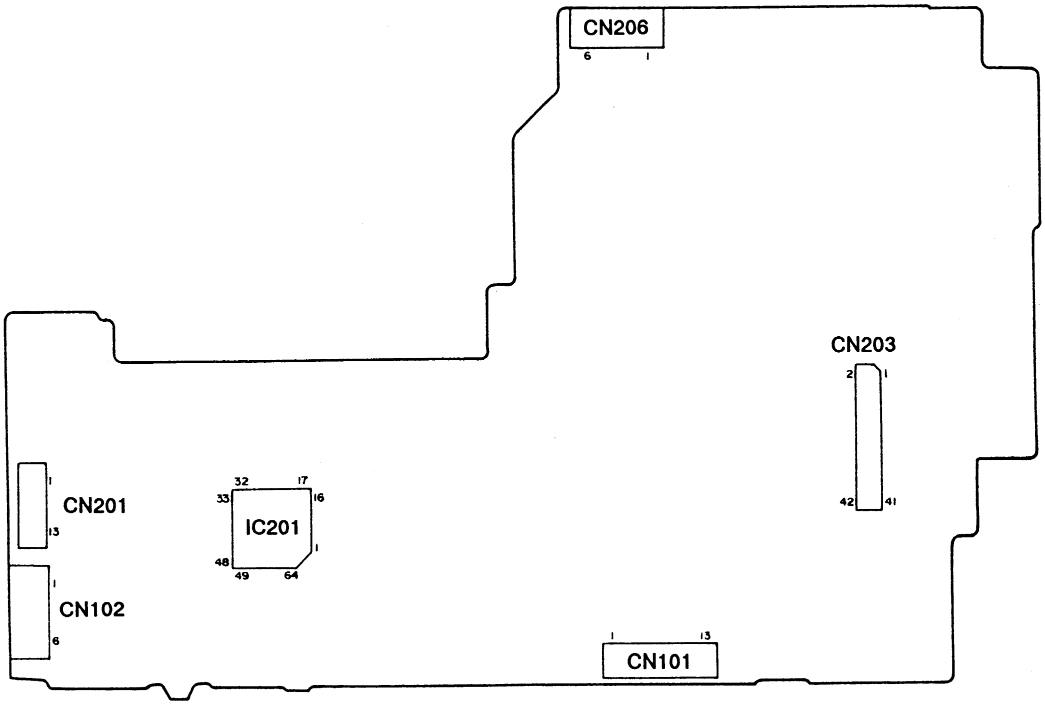
### AU-165 BOARD (COMPONENT SIDE)
### (CCD-TR72/TR80/TR400/TR430/TR750)


2
1
IC1302
34
33
64
49
48
1
IC1301
16
33
17
32

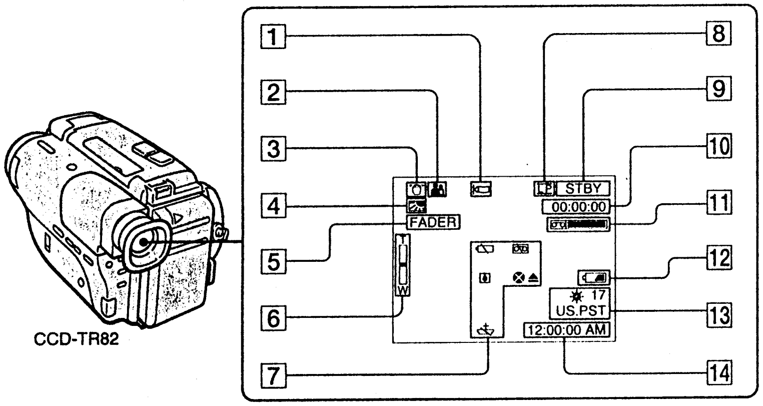
## VS BOARD (COMPONENT SIDE)


RV202
Comb filter fine
IC205
8
5
1
4

## VS BOARD (CONDUCTOR SIDE)


CN206
6
1
CN203
2
1
42
41
CN201
1
13
IC201
32
17
33
16
48
1
49
64
CN102
1
6
CN101
1
13

### In the Viewfinder



1 **Wind noise reduction indicator** (p.26) (CCD-TR72/TR80 only)

2 **PROGRAM AE mode indicator** (p.22)

3 **Steady Shot indicator** (p.24) (CCD-TR82 only)

4 **Back light indicator** (p.21)

5 **FADER indicator** (p.23)

6 **Power zoom indicator** (p.13)

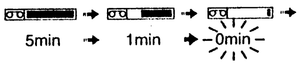
7 **Warning indicator** (p.51)

8 **Lights up when playing back a tape recorded in LP mode** (p.33)

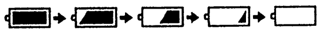
9 **Tape transport mode** (p.11, 17)

10 **Tape counter** (p.12)

11 **Tape remaining indicator**



12 **Battery remaining indicator** (p.34)

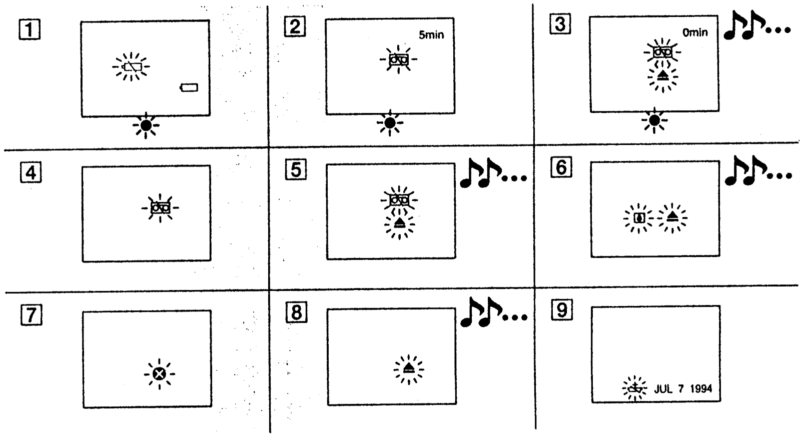


13 **World clock indicator** (p.27)

14 **Date or Time** (p.20)

## Warning Indicators

If indicators flash in the viewfinder, or a caution lamp on the camcorder flahses, check the following:
♪ : You can hear the beep sound when the BEEP is set to ON.



1 Battery Remaining
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.

3 The tape has run out.

4 No tape has been inserted.

5 The tab on the tape is out (red) (p.9).

6 Moisture condensation has occurred (p.36).

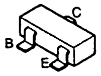
7 The video heads may be contaminated (p.37).

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

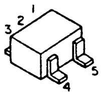
9 The lithium battery is weak or the lithium battery is not installed (p.30).

## 4-3. SEMICONDUCTORS

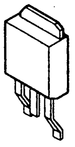
**DTA123JK**
**MSA1586**
**MSC4116**
**RN1302**
**UN511D**
**UN5113**
**UN5213**
**2SA1162**
**2SA1163**
**2SA1576**
**2SA1838**
**2SB1218**
**2SB1295**
**2SB1462**
**2SC1623**
**2SC4116**
**2SC4154**
**2SC4178**
**2SC4400**
**2SC4555**
**2SC4909**



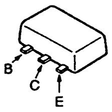
**FP101**
**FP102**



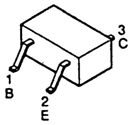
**MTD6N154**



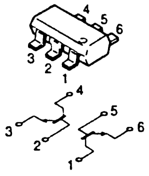
**UN094**
**2SB1121**
**2SB1122**
**2SB798**
**2SD1615**



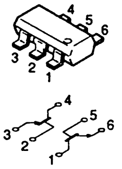
**UN5111**
**UN5211**



**XN4113**
**XN4213**
**XN4501**


4
5
6
3
2
1
4
5
3
6
2
1

**XN4312**
**XN4601**


4
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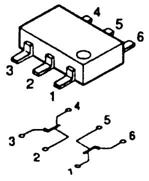
6
3
2
1
4
5
3
6
2
1

**XN4401**


4
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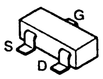
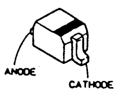
6
3
2
1
4
5
3
6
2
1

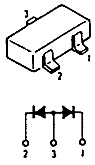
**2SK1875**



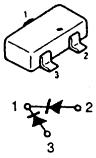
**MA110**
**MA111**
**MA365**
**1SS352**


ANODE
CATHODE

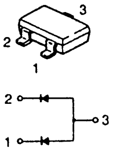
**MA142WA**
**MA152WA**



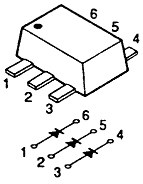
**MA142WK**



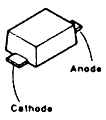
**MA4Z082WA**



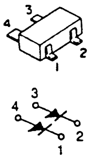
**MA6S121**


6
5
4
1
2
3
6
5
4
1
2
3

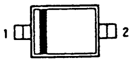
**MA728**


Anode
Cathode

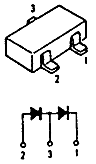
**MA796**



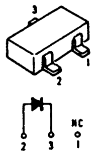
**02Z13**



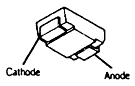
**1SS226**



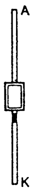
**1SS250**



**LN1251C**


Cathode
Anode

**LN1371G**



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| M003 | 1-542-162-11 | MICROHONE UNIT | |
| M901 | A-7048-564-A | DRUM ASSY (DGH-78A-R) (TR42/TR70/TR72/TR80/TR82/TR430/TR550) | |
| M901 | A-7048-633-A | DRUM ASSY (DGH-92A-R)(TR400/TR750) | |
| M905 | 1-698-364-01 | MOTOR ASSY, FOCUS (TYPE I) | |
| M906 | 1-698-363-01 | MOTOR ASSY, ZOOM (TYPE I) | |
| M907 | 3-708-888-01 | METER, IG (TYPE Ⅱ) | |
| M908 | 3-708-889-01 | MOTOR ASSY, FOCUS (TYPE Ⅱ) | |
| M909 | 3-708-887-01 | MOTOR ASSY, ZOOM (TYPE Ⅱ) | |

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## ACCESSORIES & PACKING MATERIALS

*******************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | 1-467-574-21 | REMOTE COMMANDER (RMT-708) | |
| | 1-575-334-11 | CORD, CONNECTION (A/V connecting cable) (TR72/TR80/TR400/TR430/TR750) | |
| | 1-575-335-21 | CORD, CONNECTION (S VIDEO connecting cable)(TR400/TR750) | |
| | 3-738-517-01 | BELT (S), SHOULDER | |
| | 3-758-475-21 | MANUAL, INSTRUCTION (ENGLISH) (TR42/TR70/TR72/TR80/TR82) | |
| | 3-758-475-31 | MANUAL, INSTRUCTION (FRENCH) (TR42/TR70:Canadian/TR80:Canadian/TR82:Canadian) | |
| | 3-758-742-21 | MANUAL, INSTRUCTION (ENGLISH)(TR400) | |
| | 3-758-742-31 | MANUAL, INSTRUCTION (FRENCH) (TR400:Canadian) | |
| | 3-758-782-11 | MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR430/TR550) | |
| | 3-758-782-41 | MANUAL, INSTRUCTION (CHINESE) (TR430/TR550:E) | |
| | 3-758-783-11 | MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR750) | |
| | 3-758-783-41 | MANUAL, INSTRUCTION (CHINESE)(TR750:E) | |
| | 3-758-964-11 | MANUAL, INSTRUCTION (KOREAN) (TR550:Tourist/TR750:Tourist) | |
| * | 3-795-581-21 | SAFEGUARD (SONY), IMPORTANT (TR400:US/TR70:US/TR80:US/TR82:US) | |
| * | 3-795-581-21 | SAFEGUARD (SONY), IMPORTANT (TR72) | |
| * | 3-958-198-11 | INDIVIDUAL CARTON (TR400) | |
| * | 3-958-198-31 | INDIVIDUAL CARTON (TR750) | |
| * | 3-958-663-01 | INDIVIDUAL CARTON (TR82) | |
| * | 3-958-663-11 | INDIVIDUAL CARTON (TR72) | |
| * | 3-958-663-21 | INDIVIDUAL CARTON (TR42) | |
| * | 3-958-663-31 | INDIVIDUAL CARTON (TR70) | |
| * | 3-958-663-41 | INDIVIDUAL CARTON (TR80) | |
| * | 3-958-663-71 | INDIVIDUAL CARTON (TR550) | |
| * | 3-958-663-81 | INDIVIDUAL CARTON (TR430) | |
| * | 3-958-664-01 | CUSHION, (LOWER) | |
| * | 3-958-665-01 | CUSHION, ACC | |
| | A-6768-253-A | RFU ADAPTOR (RFU-90UC)(Except Tourist) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ** | AC-V25/V25A | AC POWER ADAPTOR | |
| *** | NP-55 | BATTERY PACK | |

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

*************************************************************

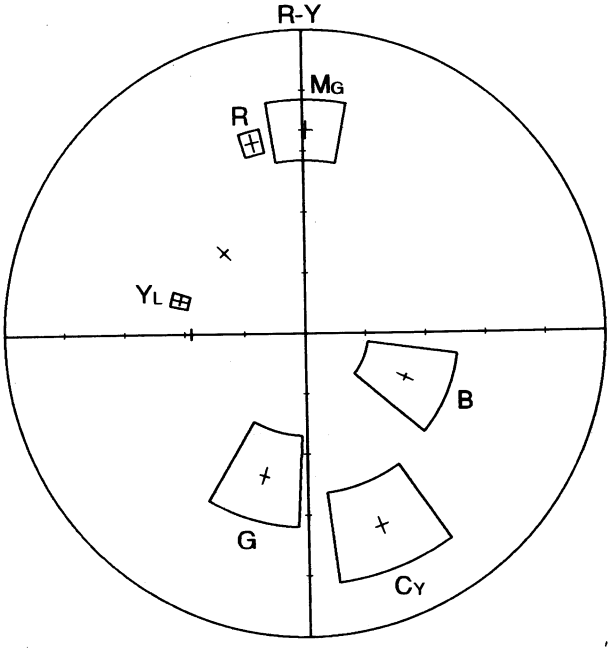
*******************

## HARDWARE LIST

*******************

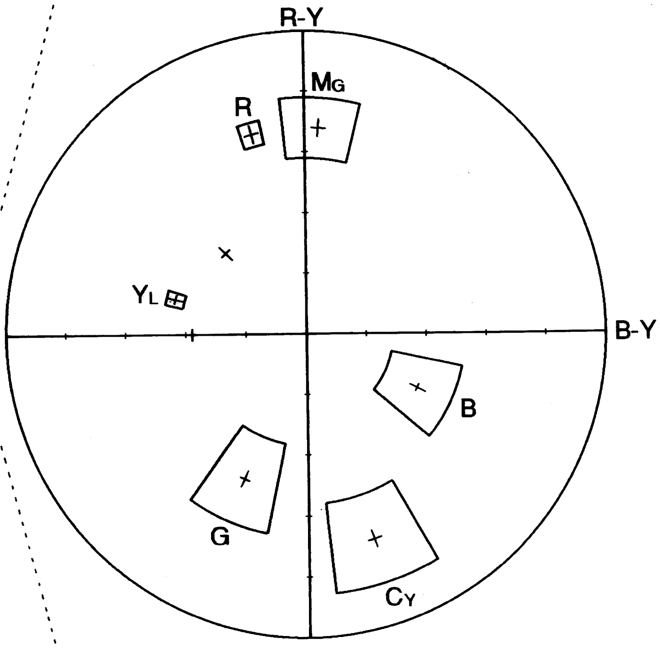
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| #1 | 7-627-553-47 | PRECISION SCREW +P 2X4 TYPE 3 | |

**FOR CAMERA COLOR REPRODUCTION ADJUSTMENT**


R-Y
B-Y
MG
R
YL
B
G
CY

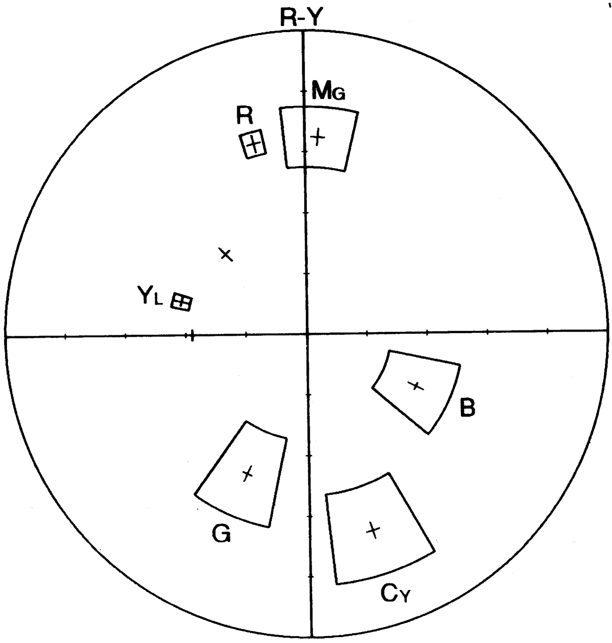
CCD-TR42/TR70/TR72/TR80/TR430

**FOR CAMERA COLOR REPRODUCTION ADJUSTMENT**


R-Y
B-Y
MG
R
YL
B
G
CY

CCD-TR400/TR750

**FOR CAMERA COLOR REPRODUCTION ADJUSTMENT**


R-Y
B-Y
MG
R
YL
B
G
CY

CCD-TR82/TR550

CCD NEW TECHNICAL THEORY FOR SERVICING

# CCD-TR400/TR750/ TR650E/TR750E

# SERVICE TECHNICAL MANUAL

SONY
12x Hi-Fi Stereo
video Hi8
AF
SONY
Video8

Photo : CCD-TR650E

Hi8 VIDEO CAMERA RECORDER

SONY®

**CCD** NEW TECHNICAL THEORY FOR SERVICING

# CCD-TR400/TR750/ TR650E/TR750E

# SERVICE TECHNICAL MANUAL

Photo : CCD-TR650E

Hi8 VIDEO CAMERA RECORDER

SONY

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1-3. Setting in REC mode of model without REC switch .......... 7

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2-3. Detail of camera circuit .......... 15
2-4. Measuring points on camera circuit .......... 33

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# 1. Outline

## 1-1. Connection for waveform/voltage check

When checking waveforms and voltages, various methods can be used for connection. Here, a simple method is used which is shown in the "SERVICE MANUAL".

### Connection for checking camera system

- Connection of VC board CN775 is not required for checking circuits other than hand-deflection compensation circuit or for locking the operation of hand-deflection compensation. The VC board can be checked easily by removing CN775.

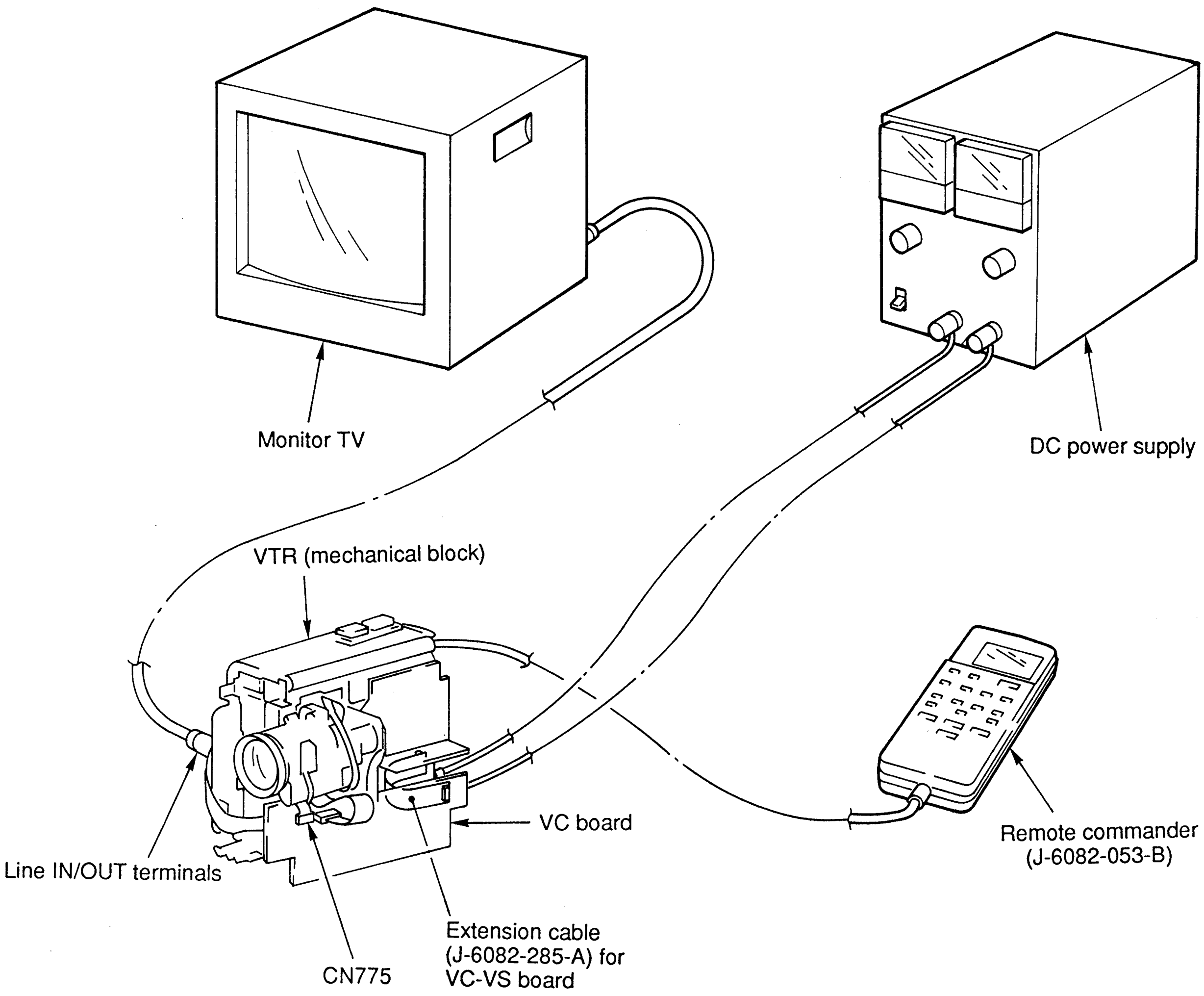

Monitor TV
DC power supply
VTR (mechanical block)
VC board
Remote commander
(J-6082-053-B)
Line IN/OUT terminals
Extension cable
(J-6082-285-A) for
VC-VS board
CN775

Fig. 1-1

# 1. Outline

## 1-1. Connection for waveform/voltage check

When checking waveforms and voltages, various methods can be used for connection. Here, a simple method is used which is shown in the "SERVICE MANUAL".

### Connection for checking camera system

- Connection of VC board CN775 is not required for checking circuits other than hand-deflection compensation circuit or for locking the operation of hand-deflection compensation. The VC board can be checked easily by removing CN775.

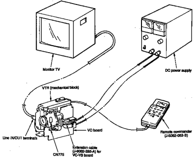
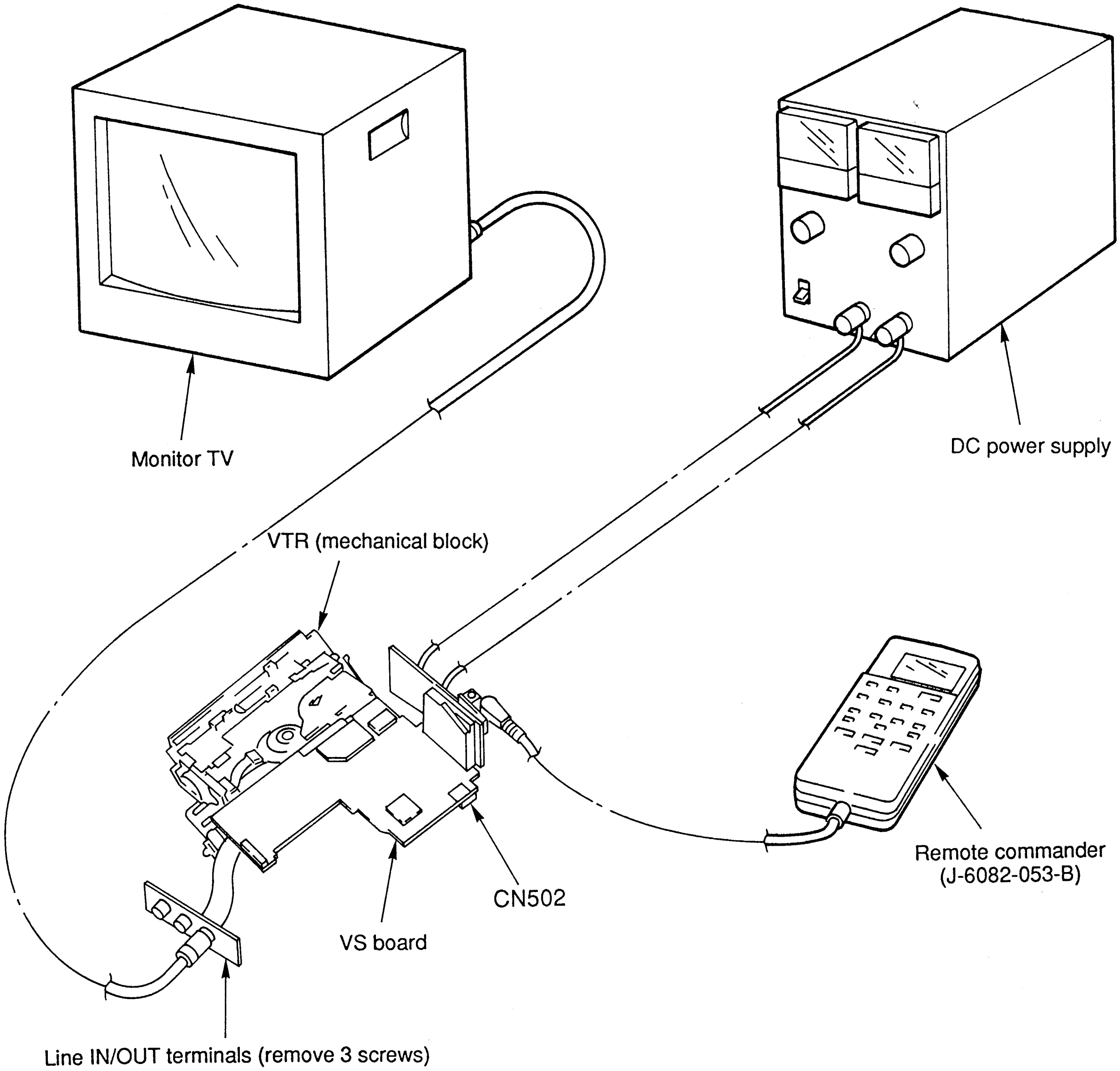

Monitor TV
DC power supply
VTR (mechanical block)
VC board
Line IN/OUT terminals
CN775
Extension cable (J-6082-235-A) for VC-VS board
Remote commander (J-6082-053-B)

Fig. 1-1

## Connection for video servo/system control circuit check

- Remove the lens block and VC board when camera video signal and character generator signal are not required.
- When the EJECT switch is not used, the VS board CN502 need not be connected. To open the VS board, remove CN502 and line IN/OUT terminals.



Monitor TV
DC power supply
VTR (mechanical block)
Remote commander
(J-6082-053-B)
CN502
VS board
Line IN/OUT terminals (remove 3 screws)

Fig. 1-2

## Connection for video servo/system control circuit check

- Remove the lens block and VC board when camera video signal and character generator signal are not required.
- When the EJECT switch is not used, the VS board CN502 need not be connected. To open the VS board, remove CN502 and line IN/OUT terminals.

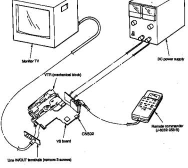

Monitor TV
DC power supply
VTR (mechanical block)
Remote commander
(J-6082-053-B)
CN502
VS board
Line IN/OUT terminals (remove 3 screws)

Fig. 1-2

## 1-2. Setting of CAMERA/VTR mode with adjusting remote commander

- When the cabinet (R) with camera, VTR power switch has been removed, use the following procedure for setting of camera, VTR mode.
- After connecting the adjusting remote commander, set NORMAL/HOLD switch in HOLD position and supply the power from the battery terminal.

### Setting of camera mode

1) Set the Data: 01 to Page: 1 and Address: 00 (D page protect is released).
2) Set the Data: 21 to Page: D and Address: 03 (Setting of camera power ON mode).
3) Press the pause button (memory write).
4) Set the NORMAL/HOLD switch in NORMAL position.

⇩

The remote commander is ready for operation.

**Indication on remote commander**

1:01:00

d:21:03

### Setting of VTR mode

1) Set the Data: 01 to Page: 1 and Address:00 (D page protect is released).
2) Set the Data: 02 to Page: D and Address:03 (Setting of VTR power ON mode)
3) Press the pause button (memory write).
4) Set the NORMAL/HOLD switch in NORMAL position.

⇩

The remote commander is ready for operation.

**Indication on remote commander**

1:01:00

d:02:03

### Release of camera/VTR power ON mode

At the completion of repair or adjustment, be sure to release camera/VTR power ON mode (or else, the power switch cannot be used).

1) Check that Page: 1 and Address: 00 are Data: 01.
   **• Page:1 and Address: 00 become Data: 00 at power OFF.**
2) Set the Page: D and Address: 03 back to Data: 00 (camera/VTR power ON mode is released).
3) Press the pause button (memory write).
4) Set the NORMAL/HOLD switch in NORMAL position.

⇩

Power OFF

**Indication on remote commander**

1:01:00

d:00:03

## 1-2. Setting of CAMERA/VTR mode with adjusting remote commander

- When the cabinet (R) with camera, VTR power switch has been removed, use the following procedure for setting of camera, VTR mode.
- After connecting the adjusting remote commander, set NORMAL/HOLD switch in HOLD position and supply the power from the battery terminal.

### Setting of camera mode

**Indication on remote commander**

1) Set the Data: 01 to Page: 1 and Address: 00 (D page protect is released). ⇨ 1:0 1:00
2) Set the Data: 21 to Page: D and Address: 03 (Setting of camera power ON mode). ⇨ d:2 1:03
3) Press the pause button (memory write).
4) Set the NORMAL/HOLD switch in NORMAL position.

⇩

The remote commander is ready for operation.

### Setting of VTR mode

**Indication on remote commander**

1) Set the Data: 01 to Page: 1 and Address:00 (D page protect is released). ⇨ 1:0 1:00
2) Set the Data: 02 to Page: D and Address:03 (Setting of VTR power ON mode) ⇨ d:02:03
3) Press the pause button (memory write).
4) Set the NORMAL/HOLD switch in NORMAL position.

⇩

The remote commander is ready for operation.

### Release of camera/VTR power ON mode

At the completion of repair or adjustment, be sure to release camera/ VTR power ON mode (or else, the power switch cannot be used).

**Indication on remote commander**

1) Check that Page: 1 and Address: 00 are Data: 01. ⇨ 1:0 1:00
   - **Page:1 and Address: 00 become Data: 00 at power OFF.**
2) Set the Page: D and Address: 03 back to Data: 00 (camera/VTR power ON mode is released). ⇨ d:00:03
3) Press the pause button (memory write).
4) Set the NORMAL/HOLD switch in NORMAL position.

⇩

Power OFF

## 1-3. Setting in REC mode of model without REC switch

**Except CCD-TR750E (E, Australian model)**

Model without REC switch cannot accept REC command of remote commander (LANC, Infrared ray). When it becomes necessary to set in VTR REC mode for checking the recording system of external signal input, cancel the REC key forbidden accept mode using the following procedure.

- When the cabinet (R) has been removed, set in VTR mode as explained before and perform the following operation.

### REC key forbidden accept mode cancel

1) Set Data: 01 to Page: 1 and Address: 00. ⇒
   (D page protect release)
2) Set Data: 16 [17] to Page: D and Address: 17. ⇒
   (REC key forbidden accept mode cancel)
3) Press pause button (memory write).
4) Set NORMAL/HOLD switch in NORMAL position.

⇩

REC mode is set by pressing REC switch.

**Indication on remote commander**

1:01:00

d:16:17

or

d:17:17

### REC key forbidden accept mode setting

At the completion of repair or adjustment, be sure to set in REC key forbidden accept mode.

(If this is not done, REC command is accepted.)

1) Check that Page: 1 and Address: 00 are Data: 01. ⇒
   - **Page: 1 and Address: 00 are set in Data: 00 at power OFF.**
2) Set Data: 06 [07] to Page: D and Address: 17. ⇒
   (REC key forbidden accept mode setting)
3) Press pause button (memory write).
4) Set NORMAL/HOLD switch in NORMAL position and check that REC command is not accepted.

**Indication on remote commander**

1:01:00

d:06:17

or

d:07:17

**Note: Data in [ ] are for E, Australian, Tourist model, except for CCD-TR750E, while other data are for AEP, UK model.**

## 1-3. Setting in REC mode of model without REC switch

**Except CCD-TR750E (E, Australian model)**

Model without REC switch cannot accept REC command of remote commander (LANC, Infrared ray). When it becomes necessary to set in VTR REC mode for checking the recording system of external signal input, cancel the REC key forbidden accept mode using the following procedure.

- When the cabinet (R) has been removed, set in VTR mode as explained before and perform the following operation.

### REC key forbidden accept mode cancel

**Indication on remote commander**

1) Set Data: 01 to Page: 1 and Address: 00. ⟹ 1:01:00
   (D page protect release)
2) Set Data: 16 [17] to Page: D and Address: 17. ⟹ d: 16: 17 or d: 17: 17
   (REC key forbidden accept mode cancel)
3) Press pause button (memory write).
4) Set NORMAL/HOLD switch in NORMAL position.

⇩

REC mode is set by pressing REC switch.

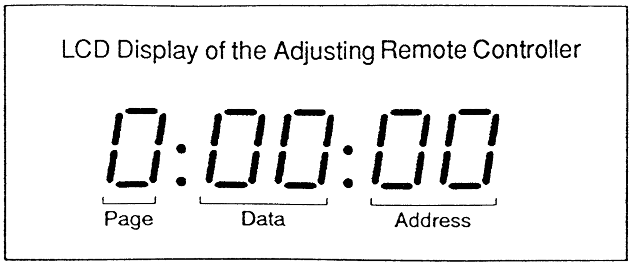
### REC key forbidden accept mode setting

At the completion of repair or adjustment, be sure to set in REC key forbidden accept mode.
(If this is not done, REC command is accepted.)

**Indication on remote commander**

1) Check that Page: 1 and Address: 00 are Data: 01. ⟹ 1:01:00
   - **Page: 1 and Address: 00 are set in Data: 00 at power OFF.**
2) Set Data: 06 [07] to Page: D and Address: 17. ⟹ d:06: 17 or d:07: 17
   (REC key forbidden accept mode setting)
3) Press pause button (memory write).
4) Set NORMAL/HOLD switch in NORMAL position and check that REC command is not accepted.

**Note: Data in [ ] are for E, Australian, Tourist model, except for CCD-TR750E, while other data are for AEP, UK model.**


LCD Display of the Adjusting Remote Controller

0:00:00
Page
Data
Address

Adjusting remote commander RM-95 (J-6082-053-B)

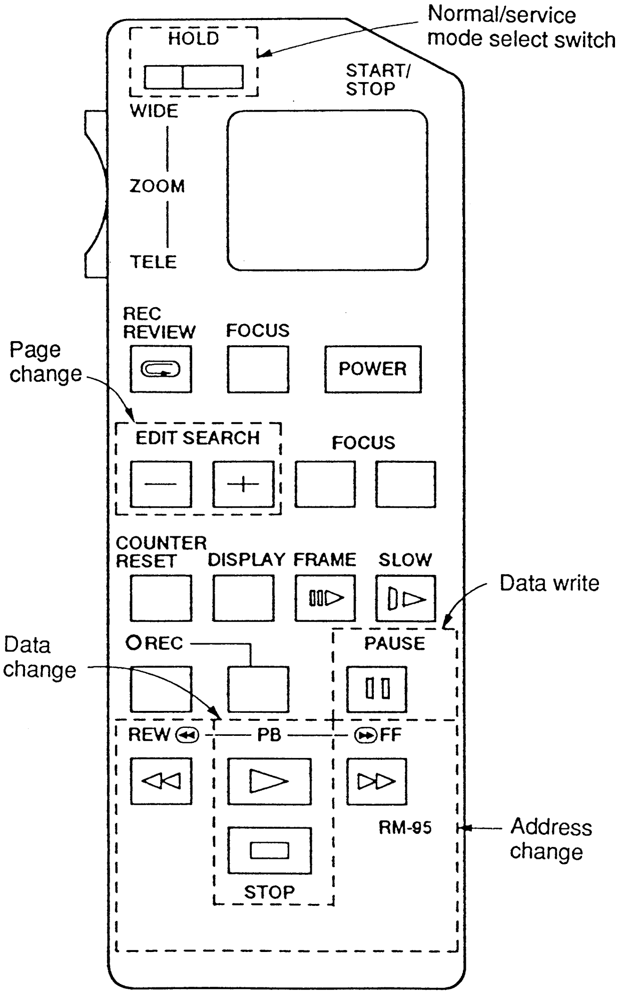
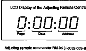

Normal/service mode select switch
HOLD
START/STOP
WIDE
ZOOM
TELE
Page change
REC REVIEW
FOCUS
POWER
EDIT SEARCH
—
+
FOCUS
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
Data change
REC
PAUSE
REW
PB
FF
RM-95
Address change
STOP

Fig. 1-3 Adjusting remote commander

LCD Display of the Adjusting Remote Controller


0:00:00
Page
Data
Address

Adjusting remote commander RM-95 (J-6082-053-B)

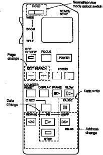

HOLD
Normal/service mode select switch
START/STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page change
EDIT SEARCH
—
+
FOCUS
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
O REC
Data change
PAUSE
REW
PB
FF
RM-95
Address change
STOP

Fig. 1-3 Adjusting remote commander

## MEMO

**MEMO**

# 2. Camera circuit

Waveforms and voltages in this Chapter have been measured under the following conditions.

- Basically, color bar chart was obtained by using PTB-450. "All white" means that the color bar chart was removed from the pattern box, while "Black mask" means that a black object was cover on the front of the lens.

Color bar chart (J-6020-250-A)

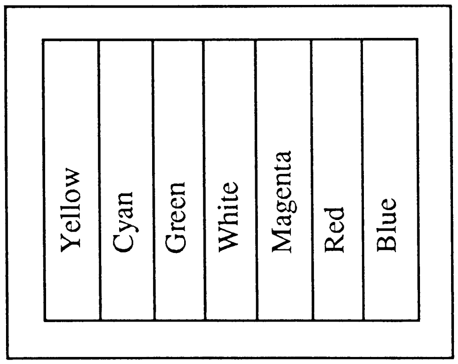

Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. 2-1

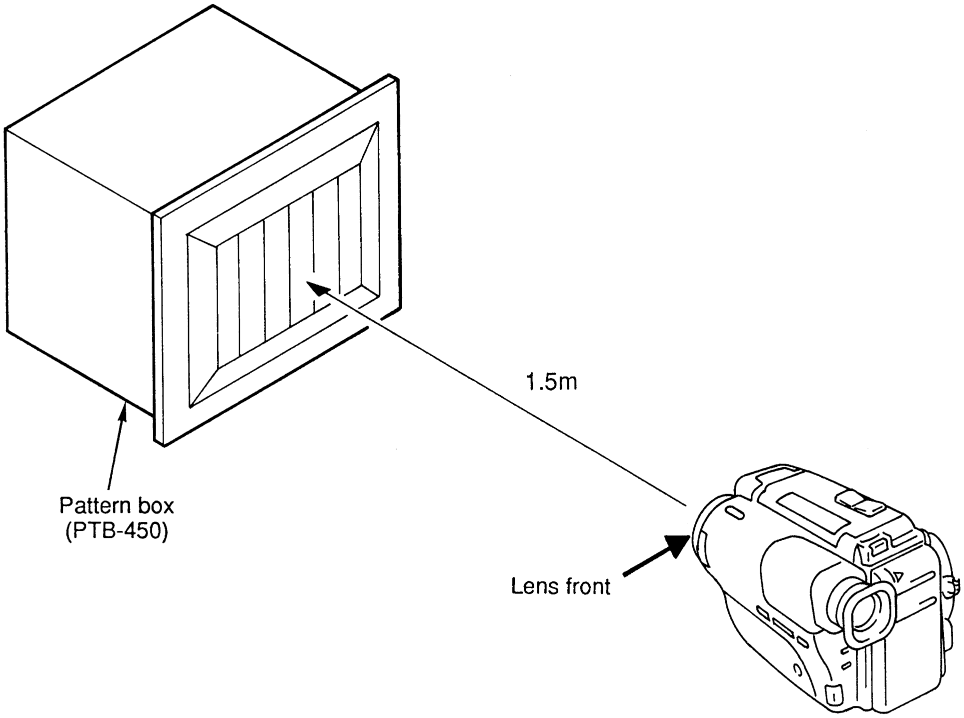

1.5m
Pattern box
(PTB-450)
Lens front

Fig. 2-2

- Auto-focus and STEADY SHOT are OFF.

# 2. Camera circuit

Waveforms and voltages in this Chapter have been measured under the following conditions.

- Basically, color bar chart was obtained by using PTB-450. "All white" means that the color bar chart was removed from the pattern box, while "Black mask" means that a black object was cover on the front of the lens.

Color bar chart (J-6020-250-A)

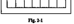

Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. 2-1

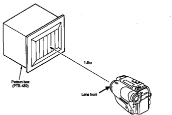

1.5m
Pattern box
(PTB-450)
Lens front

Fig. 2-2

- Auto-focus and STEADY SHOT are OFF.

# MEMO

MEMO

# 3. Video circuit

Waveforms and voltages shown in this chapter have been measured under the following conditions after the camera system (VC board) was removed, except when measuring the character generator input pulse.

- **Recording system**

Unless otherwise specified in the figure, the composite video signal from the pattern generator has been inputted to the video IN/OUT terminal. Waveforms and voltages outputted from S-video terminal and camera are also shown.

### [Input signals]

| | | | | | | |
|---|---|---|---|---|---|---|
| White (75%) | Yellow | Cyan | Green | Magenta | Red | Blue |
| Q | I | White (100%) | | | Black | |

**Fig. 3-1 Input signals**

- **Playback system**

Fig. 3-1 shows the state of playback of tape recorded with color bar signal in the standard mode.

### [Expression of each mode]

| | |
|---|---|
| STD mode | : Standard mode (conventional type of 8mm video, excluding Hi8) |
| SREC | : Recording mode for signal inputted from S-video terminal |
| COMP REC | : Recording mode for composite video signal |

# 3. Video circuit

Waveforms and voltages shown in this chapter have been measured under the following conditions after the camera system (VC board) was removed, except when measuring the character generator input pulse.

- **Recording system**

Unless otherwise specified in the figure, the composite video signal from the pattern generator has been inputted to the video IN/OUT terminal. Waveforms and voltages outputted from S-video terminal and camera are also shown.

**[Input signals]**

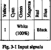


Fig. 3-1 Input signals

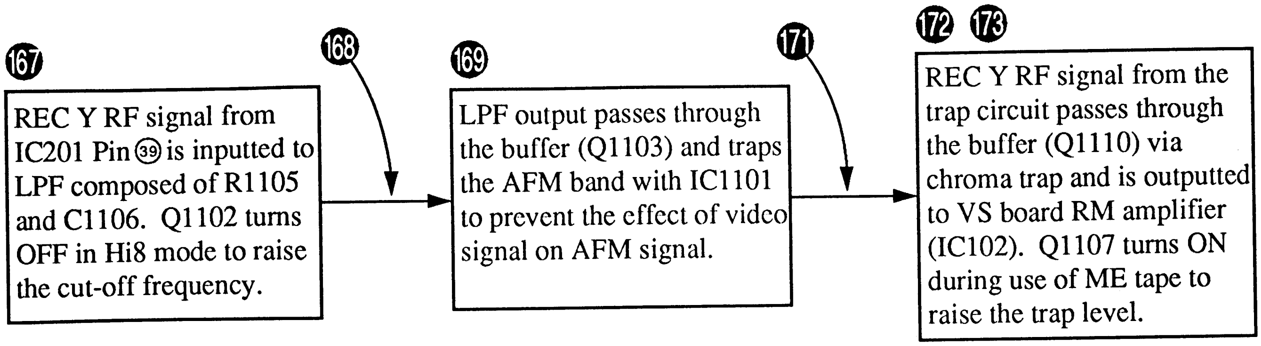
- **Playback system**

Fig. 3-1 shows the state of playback of tape recorded with color bar signal in the standard mode.

**[Expression of each mode]**

| | |
|---|---|
| STD mode | : Standard mode (conventional type of 8mm video, excluding Hi8) |
| SREC | : Recording mode for signal inputted from S-video terminal |
| COMP REC | : Recording mode for composite video signal |

## [HE board (REC Y RF system) signal flow]



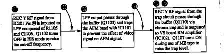
REC Y RF signal from IC201 Pin㊴ is inputted to LPF composed of R1105 and C1106. Q1102 turns OFF in Hi8 mode to raise the cut-off frequency.

LPF output passes through the buffer (Q1103) and traps the AFM band with IC1101 to prevent the effect of video signal on AFM signal.

REC Y RF signal from the trap circuit passes through the buffer (Q1110) via chroma trap and is outputted to VS board RM amplifier (IC102). Q1107 turns ON during use of ME tape to raise the trap level.

Fig. 3-10

## [HE board (REC Y RF system) signal flow]



REC Y RF signal from IC201 Pin[illegible] is inputted to LPF composed of R1105 and C1106. Q1102 turns OFF in Hi8 mode to raise the cut-off frequency.

LPF output passes through the buffer (Q1103) and traps the AFM band with IC1101 to prevent the effect of video signal on AFM signal.

REC Y RF signal from the trap circuit passes through the buffer (Q1110) via chroma trap and is outputted to VS board RM amplifier (IC102). Q1107 turns ON during use of MB tape to raise the trap level.

Fig. 3-10

**MEMO**

**MEMO**

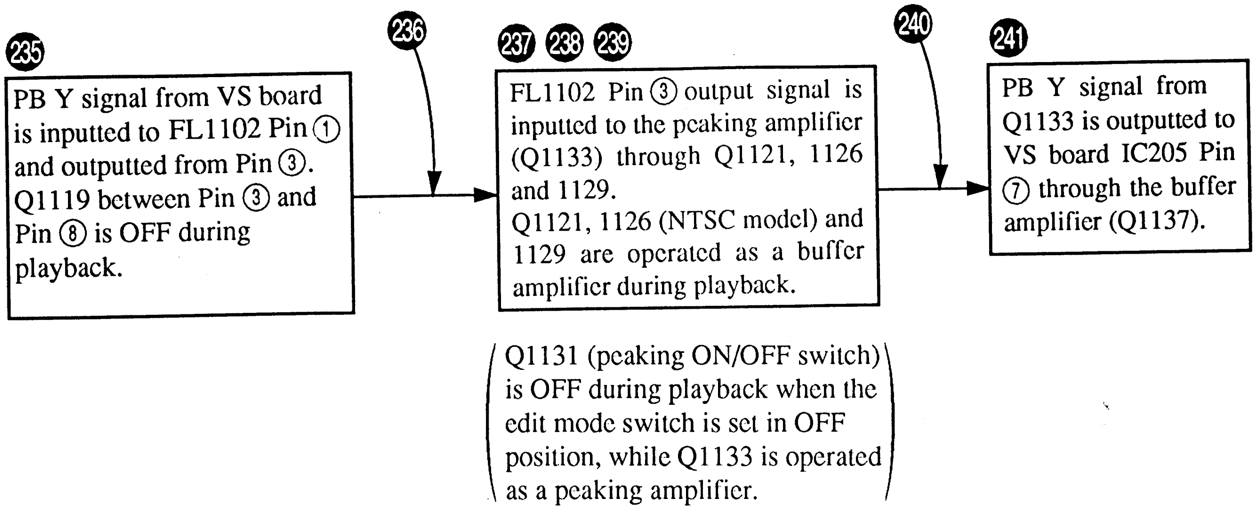
MEMO

**MEMO**

**MEMO**

**MEMO**

## [HE board (PB Y EQ) signal flow]



(235) PB Y signal from VS board is inputted to FL1102 Pin ① and outputted from Pin ③. Q1119 between Pin ③ and Pin ⑧ is OFF during playback.

(236)

(237) (238) (239) FL1102 Pin ③ output signal is inputted to the peaking amplifier (Q1133) through Q1121, 1126 and 1129. Q1121, 1126 (NTSC model) and 1129 are operated as a buffer amplifier during playback.

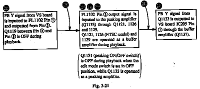
(Q1131 (peaking ON/OFF switch) is OFF during playback when the edit mode switch is set in OFF position, while Q1133 is operated as a peaking amplifier.)

(240)

(241) PB Y signal from Q1133 is outputted to VS board IC205 Pin ⑦ through the buffer amplifier (Q1137).

Fig. 3-21

## [HE board (PB Y EQ) signal flow]



PB Y signal from VS board is inputted to FL1102 Pin ① and outputted from Pin ③. Q1119 between Pin ③ and Pin ⑧ is OFF during playback.

FL1102 Pin ③ output signal is inputted to the peaking amplifier (Q1133) through Q1121, 1126 and 1129.
Q1121, 1126 (NTSC model) and 1129 are operated as a buffer amplifier during playback.

Q1131 (peaking ON/OFF switch) is OFF during playback when the edit mode switch is set in OFF position, while Q1133 is operated as a peaking amplifier.

PB Y signal from Q1133 is outputted to VS board IC205 Pin ⑦ through the buffer amplifier (Q1137).

Fig. 3-21

**MEMO**

**MEMO**

## 4-3. Loading/unloading flow chart

Loading/unloading operation with/without cassette tape is explained in the following.

If VTR is not operating as shown in the flow chart, it means that loading/unloading operation is not performed correctly.

In the event of **"EMERGENCY"** during loading/unloading or while tape is running, be sure to check the emergency code and emergency mode.

**Note: After repair, reset the address data with emergency code and emergency mode stored in memory to 00, then press the pause button of the adjusting remote commander.**

### [Address with emergency code stored in memory]

Page D: Address: EC ....... 1st emergency
Address: E8 ........ 2nd emergency
Address: E4 ........ Last emergency ⟹ Re-written on by one for the last emergency.

### [Emergency code]

| Code | Error Condition |
|---|---|
| 00 | No error |
| 01 | Loading motor error |
| 02 | Reel error during unloading |
| 03 | Reel errors at other times |
| 04 | Capstan error |
| 05 | FG error during drum start up |
| 06 | PG error during drum start up |
| 07 | FG error during normal drum conditions |
| 08 | PG error during normal drum conditions |
| 09 | Phase error during normal drum conditions |

## 4-3. Loading/unloading flow chart

Loading/unloading operation with/without cassette tape is explained in the following.

If VTR is not operating as shown in the flow chart, it means that loading/unloading operation is not performed correctly.

In the event of "EMERGENCY" during loading/unloading or while tape is running, be sure to check the emergency code and emergency mode.

**Note: After repair, reset the address data with emergency code and emergency mode stored in memory to 00, then press the pause button of the adjusting remote commander.**

### [Address with emergency code stored in memory]

Page D: Address: EC ....... 1st emergency
Address: E8 ........ 2nd emergency
Address: E4 ........ Last emergency ⟹ Re-written on by one for the last emergency.

### [Emergency code]

| Code | Error Condition |
|---|---|
| 00 | No error |
| 01 | Loading motor error |
| 02 | Reel error during unloading |
| 03 | Reel errors at other times |
| 04 | Capstan error |
| 05 | FG error during drum start up |
| 06 | PG error during drum start up |
| 07 | FG error during normal drum conditions |
| 08 | PG error during normal drum conditions |
| 09 | Phase error during normal drum conditions |

## [Address with emergency mode stored in memory]

Page D: Address: ED ....... 1st emergency
Address: E9 ........ 2nd emergency
Address: E5 ........ Last emergency ⟹ Re-written on by one for the last emergency.

## [Emergency code]

| Code | Error Condition |
|---|---|
| 00 | BEFOR INITIALIZE |
| 01 | EJECTED |
| 02 | NORMAL STOP |
| 03 | FF |
| 04 | NORMAL REC |
| 06 | NORMAL PB |
| 07 | PB PAUSE |
| 12 | LOADING |
| 14 | REC PAUSE |
| 26 | ×1 |
| 27 | 1/5 SLOW |
| 31 | UNLOADING |
| 46 | CUE |
| 56 | REVIEW |
| 62 | STOP TAPE END |
| 66 | ×2 |
| 67 | FRAME |
| 72 | STOP TAPE TOP |
| 83 | REWIND |
| 85 | REC REVIEW (+) |
| 95 | REC REVIEW (−) |
| 97 | −PB PAUSE |
| A2 | EMERGENCY LOADING |
| A5 | EDIT SEARCH (+) |
| B1 | EMERGENCY UNLOADING |
| B2 | STOP EMERGENCY 1 |
| B5 | EDIT SEARCH (−) |
| C2 | STOP EMERGENCY 2 |
| E2 | STOP NO CASSETTE |
| F5 | EDIT PAUSE |

## [Address with emergency mode stored in memory]

Page D: Address: ED ....... 1st emergency
Address: E9 ....... 2nd emergency
Address: E5 ....... Last emergency ⟹ Re-written on by one for the last emergency.

## [Emergency code]

| Code | Error Condition |
|---|---|
| 00 | BEFOR INITIALIZE |
| 01 | EJECTED |
| 02 | NORMAL STOP |
| 03 | FF |
| 04 | NORMAL REC |
| 06 | NORMAL PB |
| 07 | PB PAUSE |
| 12 | LOADING |
| 14 | REC PAUSE |
| 26 | ×1 |
| 27 | 1/5 SLOW |
| 31 | UNLOADING |
| 46 | CUE |
| 56 | REVIEW |
| 62 | STOP TAPE END |
| 66 | ×2 |
| 67 | FRAME |
| 72 | STOP TAPE TOP |
| 83 | REWIND |
| 85 | REC REVIEW (+) |
| 95 | REC REVIEW (−) |
| 97 | −PB PAUSE |
| A2 | EMERGENCY LOADING |
| A5 | EDIT SEARCH (+) |
| B1 | EMERGENCY UNLOADING |
| B2 | STOP EMERGENCY 1 |
| B5 | EDIT SEARCH (−) |
| C2 | STOP EMERGENCY 2 |
| E2 | STOP NO CASSETTE |
| F5 | EDIT PAUSE |

## [Detection of "with/without cassette"]

During loading/unloading operation, "with/without cassette tape" is detected by the tape top/end sensor. It is detected at ON of CC DOWN SWITCH (Cassette compartment down switch).

(1) Detection of the light of TAPE LED by both tape top/end sensors ......... "Without tape" is detected. Loading/unloading operation is effected when drum/capstan motor is not rotated.

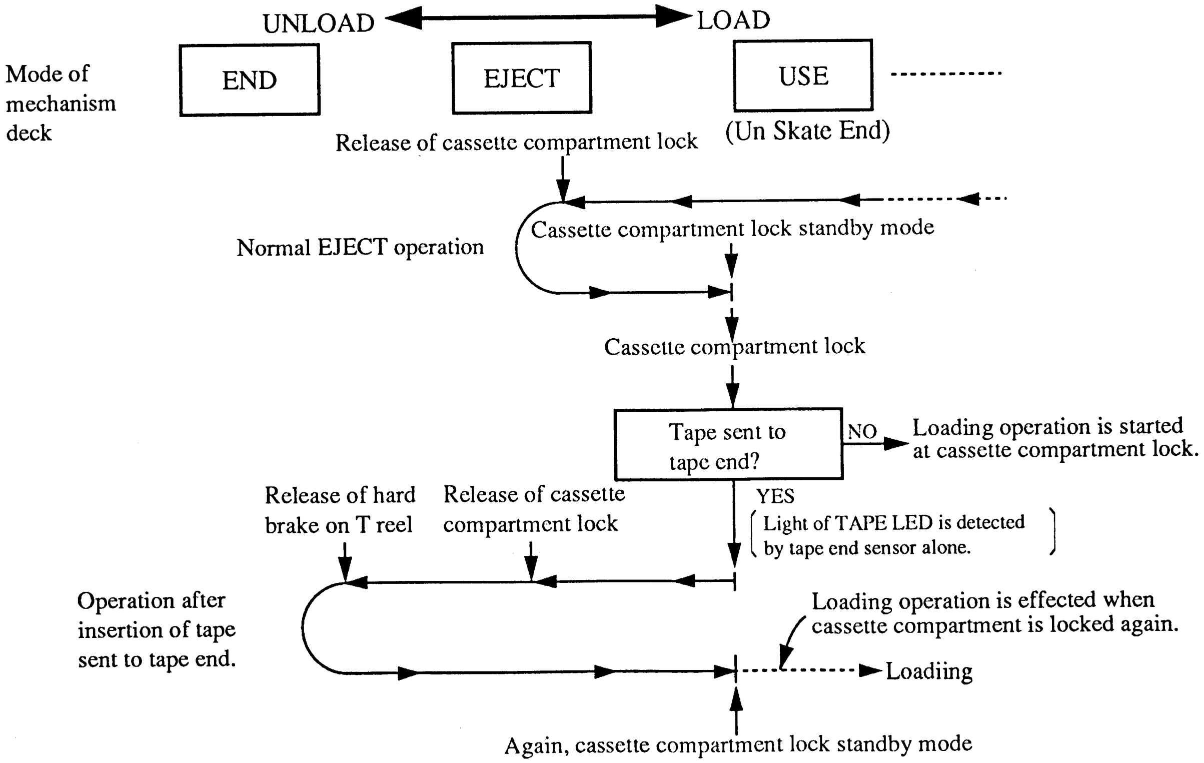
(2) Detection of the light of TAPE LED by tape top sensor alone or no detection by both tape top/end sensor ......... "With tape" is detected. Loading/unloading operation is effected when drum/capstan motor is rotated to remove tape slack.

(3) Detection of the light of TAPE LED by tape end sensor alone ......... Tape which has been sent to tape end is detected when it is inserted.

## [Detection of insertion of tape which has been sent to tape end]

The mechanism deck of this model is designed for loading with tape pulled out from S reel and for unloading with tape wound on S reel. T reel is given a hard brake and when tape is sent to the tape end and no tape is wound on S reel, loading operation is not effected.

In this case shift the mode to the end (END mode) of EJECT mode to release the hard brake on T reel for cassette compartment lock standby mode.



UNLOAD
LOAD
Mode of mechanism deck
END
EJECT
USE
(Un Skate End)
Release of cassette compartment lock
Normal EJECT operation
Cassette compartment lock standby mode
Cassette compartment lock
Tape sent to tape end?
NO
Loading operation is started at cassette compartment lock.
YES
Light of TAPE LED is detected by tape end sensor alone.
Release of hard brake on T reel
Release of cassette compartment lock
Operation after insertion of tape sent to tape end.
Loading operation is effected when cassette compartment is locked again.
Loading
Again, cassette compartment lock standby mode

Fig. 4-8

## [Detection of "with/without cassette"]

During loading/unloading operation, "with/without cassette tape" is detected by the tape top/end sensor. It is detected at ON of CC DOWN SWITCH (Cassette compartment down switch).

(1) Detection of the light of TAPE LED by both tape top/end sensors ......... "Without tape" is detected. Loading/unloading operation is effected when drum/capstan motor is not rotated.

(2) Detection of the light of TAPE LED by tape top sensor alone or no detection by both tape top/end sensor ......... "With tape" is detected. Loading/unloading operation is effected when drum/capstan motor is rotated to remove tape slack.

(3) Detection of the light of TAPE LED by tape end sensor alone ......... Tape which has been sent to tape end is detected when it is inserted.

## [Detection of insertion of tape which has been sent to tape end]

The mechanism deck of this model is designed for loading with tape pulled out from S reel and for unloading with tape wound on S reel. T reel is given a hard brake and when tape is sent to the tape end and no tape is wound on S reel, loading operation is not effected.

In this case shift the mode to the end (END mode) of EJECT mode to release the hard brake on T reel for cassette compartment lock standby mode.

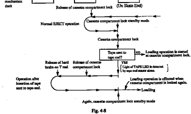

UNLOAD
LOAD
Mode of mechanism deck
END
EJECT
USE
(Un Skate End)
Release of cassette compartment lock
Normal EJECT operation
Cassette compartment lock standby mode
Cassette compartment lock
Tape sent to tape end?
NO
Loading operation is started at cassette compartment lock.
YES
Light of TAPE LED is detected by tape end sensor alone.
Release of hard brake on T reel
Release of cassette compartment lock
Operation after insertion of tape sent to tape end.
Loading operation is effected when cassette compartment is locked again.
Loading
Again, cassette compartment lock standby mode

Fig. 4-8

**MEMO**

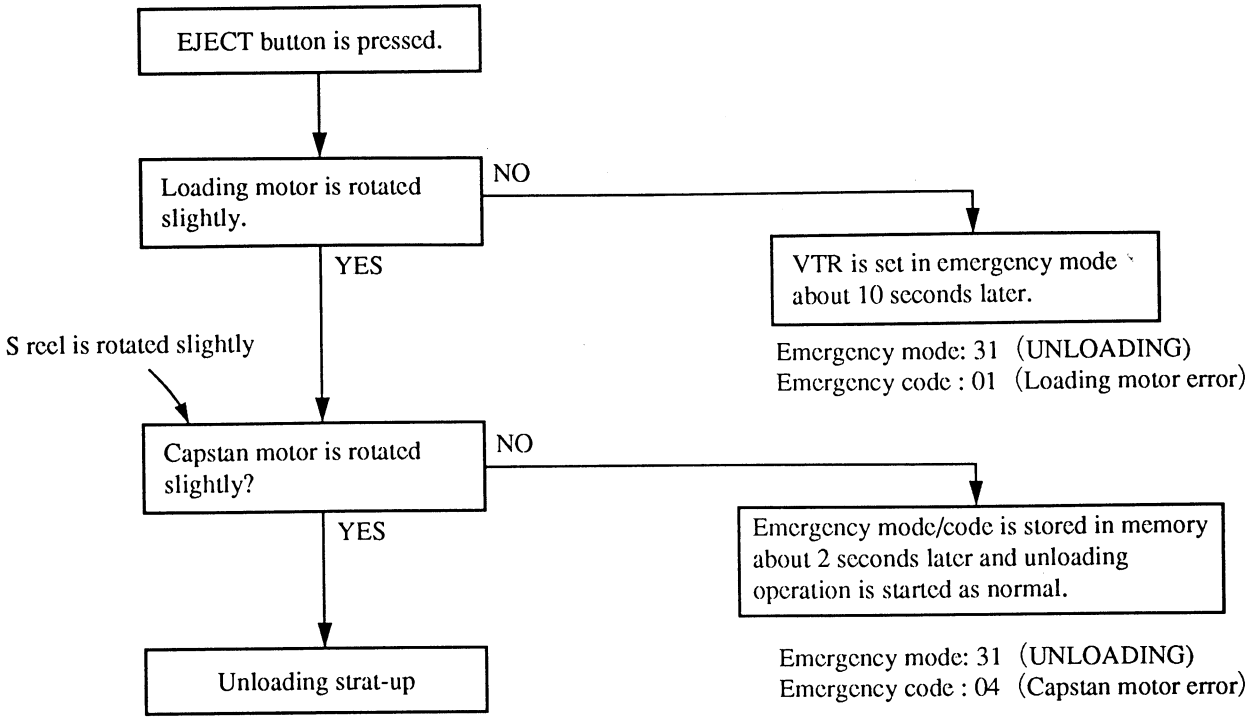
**MEMO**

**MEMO**

**MEMO**

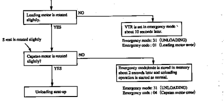
## • UNLOADING (without cassette tape)

- When the light of TAPE LED is intercepted and the power switch is turned OFF→ON once (or after LOADING with the light of TAPE LED intercepted in EJECT mode), VTR operates in the same mode as UNLOADING with cassette tape by pressing the EJECT button.


EJECT button is pressed.
Loading motor is rotated slightly.
NO
YES
VTR is set in emergency mode about 10 seconds later.
Emergency mode: 31 (UNLOADING)
Emergency code : 01 (Loading motor error)
S reel is rotated slightly
Capstan motor is rotated slightly?
NO
YES
Emergency mode/code is stored in memory about 2 seconds later and unloading operation is started as normal.
Unloading strat-up
Emergency mode: 31 (UNLOADING)
Emergency code : 04 (Capstan motor error)

## • UNLOADING (without cassette tape)

- When the light of TAPE LED is intercepted and the power switch is turned OFF→ON once (or after LOADING with the light of TAPE LED intercepted in EJECT mode), VTR operates in the same mode as UNLOADING with cassette tape by pressing the EJECT button.

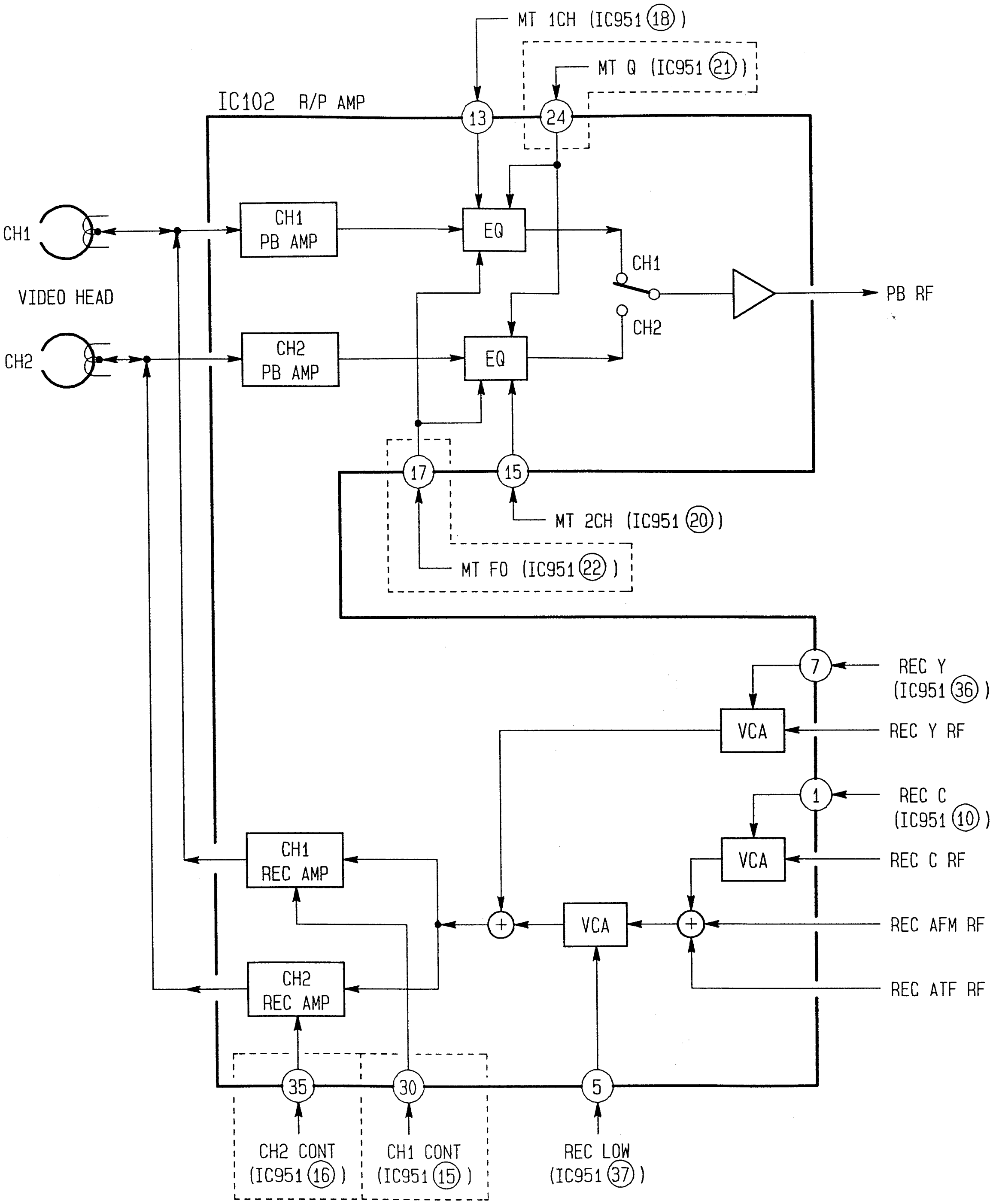

EJECT button is pressed.
Loading motor is rotated slightly.
NO
YES
VTR is set in emergency mode about 10 seconds later.
Emergency mode: 31 (UNLOADING)
Emergency code : 01 (Loading motor error)
S reel is rotated slightly
Capstan motor is rotated slightly?
NO
YES
Emergency mode/code is stored in memory about 2 seconds later and unloading operation is started as normal.
Emergency mode: 31 (UNLOADING)
Emergency code : 04 (Capstan motor error)
Unloading start-up

**MEMO**

**MEMO**

# 5-2. Video system

## A. RF signal system

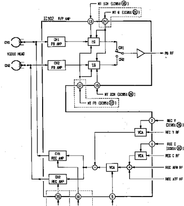

MT 1CH (IC951 ⑱)
MT Q (IC951 ㉑)
IC102 R/P AMP
13
24
CH1
VIDEO HEAD
CH2
CH1 PB AMP
CH2 PB AMP
EQ
EQ
CH1
CH2
PB RF
17
15
MT 2CH (IC951 ⑳)
MT F0 (IC951 ㉒)
7
REC Y (IC951 ㊱)
VCA
REC Y RF
1
REC C (IC951 ⑩)
VCA
REC C RF
CH1 REC AMP
CH2 REC AMP
+
VCA
+
REC AFM RF
REC ATF RF
35
30
5
CH2 CONT (IC951 ⑯)
CH1 CONT (IC951 ⑮)
REC LOW (IC951 ㊲)

Adjusting voltage shown in ┆┄┆ is fixed and no adjustment is required.

Fig. 5-3

## 5-2. Video system

### A. RF signal system


NT 1CH (IC951 ⑱)
NT 0 (IC951 ㉑)
IC102 R/P AMP
19
24
CH1
VIDEO HEAD
CH2
CH1 PB AMP
CH2 PB AMP
EQ
EQ
CH1
CH2
PB RF
17
15
NT 2CH (IC951 ⑳)
NT FO (IC951 ㉒)
7
REC Y (IC951 ㊱)
VCA
REC Y RF
1
REC C (IC951 ⑯)
VCA
REC C RF
CH1 REC AMP
CH2 REC AMP
VCA
REC AFM RF
REC ATF RF
36
30
5
CH2 CONT (IC951 ⑱)
CH1 CONT (IC951 ⑮)
REC LOW (IC951 ㊲)

Adjusting voltage shown in [ ] is fixed and no adjustment is required.

Fig. 5-3

## • Video system adjusting voltage is outputted from IC951.

| IC951 Pin No. | Name | Function | Page D Address | Data | Voltage [V] | Adjusting voltage "LOW" | Adjusting voltage "HIGH" |
|---|---|---|---|---|---|---|---|
| 10 | REC C | Chroma signal REC current adjustment | 30 | E5 | 4.4 | Remains unchanged. | Color is distorted on recorded picture and color S/N become poor. |
| 18 | MT 1CH | CH 1 PB frequency characteristic adjustment | 5A | E1 | 4.2 | Remains unchanged. | Remains unchanged. |
| 20 | MT 2CH | CH 2 PB frequency characteristic adjustment | 5F | D7 | 4.1 | | |
| 36 | REC Y | Y signal REC current adjustment | 44 | BD | 3.6 | Short cycle noise appears on several points | Color is distorted over the entire picture and inversion noise appears. |
| 37 | REC LOW | CH 1 low frequency signal mix level adjustment (ME tape) | 38 | DF | 4.3 | Inversion noise appears on colored picture. | Color noise and distortion appear on the entire picture. |
| | | CH 1 low frequency signal mix level adjustment (MP tape) | 39 | E9 | 4.5 | | |
| | | CH 2 low frequency signal mix level adjustment (ME tape) | 3A | DF | 4.3 | | |
| | | CH 2 low frequency signal mix level adjustment (MP tape) | 3B | E9 | 4.5 | | |

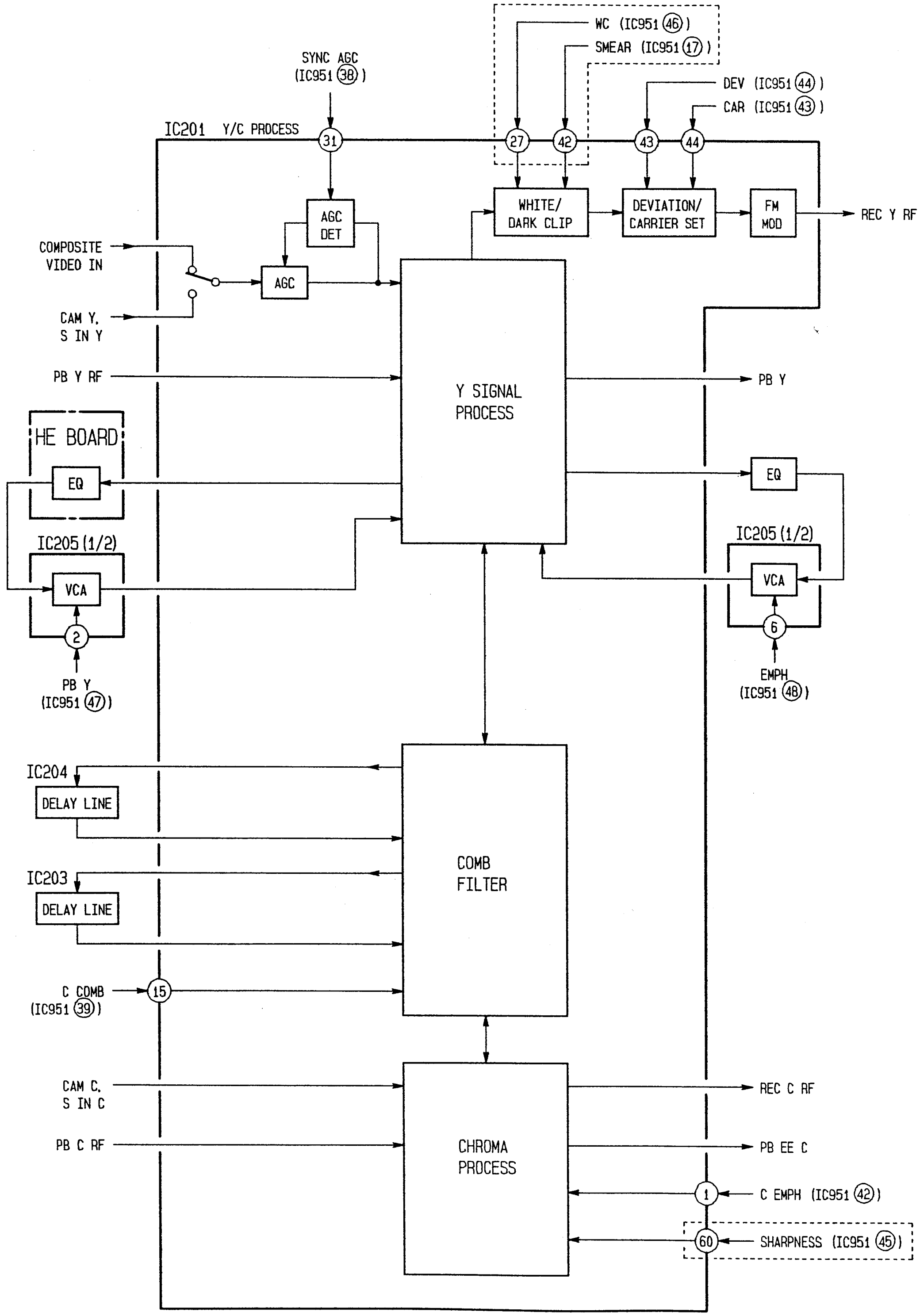
*** Voltages were measured at corresponding measuring points, and only the addresses for adjustment to specifications are shown.**
**The state of REC adjusting voltage is shown after playback of recorded signal at high or low voltage.**

- **Video system adjusting voltage is outputted from IC951.**

| IC951 Pin No. | Name | Function | Page D Address | Data | Voltage [V] | Adjusting voltage "LOW" | Adjusting voltage "HIGH" |
|---|---|---|---|---|---|---|---|
| 10 | REC C | Chroma signal REC current adjustment | 3D | E5 | 4.4 | Remains unchanged. | Color is distorted on recorded picture and color S/N become poor. |
| 18 | MT 1CH | CH 1 PB frequency characteristic adjustment | 5A | E1 | 4.2 | Remains unchanged. | Remains unchanged. |
| 20 | MT 2CH | CH 2 PB frequency characteristic adjustment | 5F | D7 | 4.1 | | |
| 36 | REC Y | Y signal REC current adjustment | 44 | BD | 3.6 | Short cycle noise appears on several points | Color is distorted over the entire picture and inversion noise appears. |
| 37 | REC LOW | CH 1 low frequency signal mix level adjustment (MB tape) | 38 | DF | 4.3 | Inversion noise appears on colored picture. | Color noise and distortion appear on the entire picture. |
| | | CH 1 low frequency signal mix level adjustment (MP tape) | 39 | E9 | 4.5 | | |
| | | CH 2 low frequency signal mix level adjustment (ME tape) | 3A | DF | 4.3 | | |
| | | CH 2 low frequency signal mix level adjustment (MP tape) | 3B | E9 | 4.5 | | |

* **Voltages were measured at corresponding measuring points, and only the addresses for adjustment to specifications are shown.**
**The state of REC adjusting voltage is shown after playback of recorded signal at high or low voltage.**

## B. Video signal system

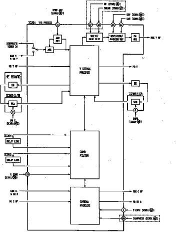


WC (IC951 ㊻)
SMEAR (IC951 ⑰)
SYNC AGC (IC951 ㊳)
DEV (IC951 ㊹)
CAR (IC951 ㊸)
IC201 Y/C PROCESS
31
27
42
43
44
AGC DET
WHITE/ DARK CLIP
DEVIATION/ CARRIER SET
FM MOD
REC Y RF
COMPOSITE VIDEO IN
AGC
CAM Y, S IN Y
PB Y RF
Y SIGNAL PROCESS
PB Y
HE BOARD
EQ
EQ
IC205 (1/2)
IC205 (1/2)
VCA
VCA
2
6
PB Y (IC951 ㊼)
EMPH (IC951 ㊽)
IC204
DELAY LINE
IC203
DELAY LINE
COMB FILTER
C COMB (IC951 ㊴)
15
CAM C, S IN C
PB C RF
CHROMA PROCESS
REC C RF
PB EE C
1
C EMPH (IC951 ㊷)
60
SHARPNESS (IC951 ㊺)

Adjusting voltage shown in ⬚ is fixed and no adjustment is required.

Fig. 5-4

## B. Video signal system


IC201 Y/C PROCESS
AGC DET
AGC
COMPOSITE VIDEO IN
CAM Y, S IN Y
PB Y RF
WHITE/DARK CLIP
DEVIATION/CARRIER SET
FM MOD
REC Y RF
DEV
CAR
Y SIGNAL PROCESS
PB Y
HE BOARD
IC205 (1/2)
VCA
EMPH
IC204
DELAY LINE
IC203
DELAY LINE
COMB FILTER
CAM C, S IN C
PB C RF
CHROMA PROCESS
REC C RF
C EMPH
SHARPNESS

Adjusting voltage shown in ⬚ is fixed
and no adjustment is required.

Fig. 5-4

## • Video system adjusting voltage is outputted from IC951.

| IC951 Pin No. | Name | Function | Page D Address | Data | Voltage [V] | Adjusting voltage "LOW" | Adjusting voltage "HIGH" |
|---|---|---|---|---|---|---|---|
| 38 | SYNC AGC | SYNC AGC level adjustment | 70 | 78 | 2.3 | Remains unchanged. | Picture is dark. No picture appears when voltage is very high. |
| 39 | C COMB | Comb filter adjustment | 71 | 99 | 2.9 | REC: Color distortion on colored picture | |
| | | | | | | PB: Dark color | PB: Remains unchanged. |
| 42 | C EMPH | Chroma emphasis adjustment (EE) | 80 | 9A | 3.0 | Remains unchanged. | Remains unchanged. |
| | | Chroma emphasis adjustment (PB) | 81 | 9A | 3.0 | Remains unchanged. | Slight change in color |
| 43 | CAR | Hi8 mode Y FM carrier frequency adjustment | 74 | CE | 4.0 | Color distortion appears. | Inversion noise appears. |
| | | Normal mode Y FM carrier frequency adjustment | 75 | C0 | 3.7 | White/black picture appears, and picture is distorted. | Inversion noise appears. |
| 44 | DEV | Hi8 mode Y FM deviation adjustment | 76 | A8 | 3.2 | Picture becomes dark. | Slight inversion noise appears. |
| | | Normal mode Y FM deviation adjustment | 77 | 97 | 2.9 | Picture becomes dark. | Inversion noise appears. |
| 47 | PB Y | Hi8 mode deemphasis level adjustment | 86 | AF | 3.4 | Picture becomes dark. No picture appears when voltage is very low. | Picture becomes bright. |
| | | Normal mode deemphasis level adjustment | 87 | A2 | 3.15 | | |
| 48 | EMPH | EE mode emphasis input level adjustment | 82 | A8 | 3.2 | Picture becomes dark. No picture appears when voltage is very low. | Picture becomes bright. |
| | | PB mode Y output level adjustment | 83 | 8F | 2.7 | | |

- **Video system adjusting voltage is outputted from IC951.**

| IC951 Pin No. | Name | Function | Page D Address | Data | Voltage [V] | Adjusting voltage "LOW" | Adjusting voltage "HIGH" |
|---|---|---|---|---|---|---|---|
| 38 | SYNC AGC | SYNC AGC level adjustment | 70 | 78 | 2.3 | Remains unchanged. | Picture is dark. No picture appears when voltage is very high. |
| 39 | C COMB | Comb filter adjustment | 71 | 99 | 2.9 | REC: Color distortion on colored picture | |
| | | | | | | PB: Dark color | PB: Remains unchanged. |
| 42 | C EMPH | Chroma emphasis adjustment (EE) | 80 | 9A | 3.0 | Remains unchanged. | Remains unchanged. |
| | | Chroma emphasis adjustment (PB) | 81 | 9A | 3.0 | Remains unchanged. | Slight change in color |
| 43 | CAR | HiS mode Y FM carrier frequency adjustment | 74 | CE | 4.0 | Color distortion appears. | Inversion noise appears. |
| | | Normal mode Y FM carrier frequency adjustment | 75 | C0 | 3.7 | White/black picture appears, and picture is distorted. | Inversion noise appears. |
| 44 | DEV | HiS mode Y FM deviation adjustment | 76 | A8 | 3.2 | Picture becomes dark. | Slight inversion noise appears. |
| | | Normal mode Y FM deviation adjustment | 77 | 97 | 2.9 | Picture becomes dark. | Inversion noise appears. |
| 47 | PB Y | HiS mode deemphasis level adjustment | 86 | AF | 3.4 | Picture becomes dark. No picture appears when voltage is very low. | Picture becomes bright. |
| | | Normal mode deemphasis level adjustment | 87 | A2 | 3.15 | | |
| 48 | EMPH | EE mode emphasis input level adjustment | 82 | A8 | 3.2 | Picture becomes dark. No picture appears when voltage is very low. | Picture becomes bright. |
| | | PB mode Y output level adjustment | 83 | 8F | 2.7 | | |

# 6. Operation at fault detection

The following explains the operation in each mode when each motors are not rotated or when rotation detect signal and other detect signals are lost.

## ① REEL FG signal is not outputted due to trouble with REEL FG sensor or REEL FG amplifier.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| LOADING | Not detected | | |
| UNLOADING | Set in emergency mode after the start of unloading operation for emergency loading. | 31 | 02 |
| REC/PB | Set in emergency mode about 3 seconds later. | 04/06 | 03 |
| FF/REW | Set in emergency mode immediately. | 03/83 | 03 |

- When VTR is set in emergency mode, all the switches other than EJECT SWITCH and POWER SWITCH cannot be used.

## ② Drum motor is not rotated.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| LOADING | Set in EJECT mode about 6 seconds after CC DOWN SWITCH ON. | 12 | 05 |
| UNLOADING | Set in emergency UNLOADING about 6 seconds after EJECT SWITCH ON. | 31 | 05 |
| REC/PB | Set in emergency mode immediately. | 04/06 | 07 |
| FF/REW | Set in emergency mode immediately. | 03/83 | 07 |

- When VTR is set in emergency mode while tape is running, REC/PB, FF/REW, etc., all the switches other than EJECT SWITCH and POWER SWITCH cannot be used. In this case, EJECT operation is effected by emergency unloading.

### [Emergency unloading]

Tape is slightly taken up by T reel and then wound on S reel for unloading. At this time, the drum motor is not rotated.

In the emergency unloading, the loading motor is driven step by step.

# 6. Operation at fault detection

The following explains the operation in each mode when each motors are not rotated or when rotation detect signal and other detect signals are lost.

## ① REEL FG signal is not outputted due to trouble with REEL FG sensor or REEL FG amplifier.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| LOADING | Not detected | | |
| UNLOADING | Set in emergency mode after the start of unloading operation for emergency loading. | 31 | 02 |
| REC/PB | Set in emergency mode about 3 seconds later. | 04/06 | 03 |
| FF/REW | Set in emergency mode immediately. | 03/83 | 03 |

- When VTR is set in emergency mode, all the switches other than EJECT SWITCH and POWER SWITCH cannot be used.

## ② Drum motor is not rotated.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| LOADING | Set in EJECT mode about 6 seconds after CC DOWN SWITCH ON. | 12 | 05 |
| UNLOADING | Set in emergency UNLOADING about 6 seconds after EJECT SWITCH ON. | 31 | 05 |
| REC/PB | Set in emergency mode immediately. | 04/06 | 07 |
| FF/REW | Set in emergency mode immediately. | 03/83 | 07 |

- When VTR is set in emergency mode while tape is running, REC/PB, FF/REW, etc., all the switches other than EJECT SWITCH and POWER SWITCH cannot be used. In this case, EJECT operation is effected by emergency unloading.

**[Emergency unloading]**

Tape is slightly taken up by T reel and then wound on S reel for unloading. At this time, the drum motor is not rotated.

In the emergency unloading, the loading motor is driven step by step.

## ③ No DRUM FG/PG output

- VTR runs away and is set in emergency mode when the drum motor is rotated from the stop position regardless of mode.
  The processing taken after emergency mode is the same as that for "**2 Drum motor is not rotated**".

| Emergency mode: | Emergency code: 05 or 07 |
|---|---|
| 12 (LOADING) | |
| 31 (UNLOADING) | |
| 04 (REC) | |
| 06 (PB) | |
| 03 (FF) | |
| 83 (REW) | |

## ④ Capstan motor is not rotated.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| LOADING | Shifted to loading end position about 3 seconds after CC DOWN SWITCH ON. At this time, all the switches other than EJECT, POWER SWITCH cannot be used. | 12 | 04 |
| UNLOADING | Loading motor is rotated slightly and tape guide is shifted slightly in unload direction for emergency loading. | 31 | 04 |
| REC/PB | Set in emergency mode about 2 seconds later. | 04/06 | 04 |
| FF/REW | Set in emergency mode about 2 seconds later. | 03/83 | 04 |

**[Emergency loading]**

When trouble arises, loading operation is effected to the normal loading end position. In this mode, all the switches other than POWER, EJECT SWITCH cannot be used.

At this time, EJECT operation is effected only once.

If this is not effected correctly, all the switches other than POWER SWITCH cannot be used.

## ⑤ No capstan FG output

- Capstan motor runs away (REC/PB, FF/REW) and VTR is set in emergency mode about 1 second later (during loading/unloading, only the emergency mode/code are written).
- In the emergency mode, all the switches other than EJECT, POWER SWITCH cannot be used.

| Mode | Emergency mode | Emergency code |
|---|---|---|
| LOADING | 12 | 04 |
| UNLOADING | 31 | 04 |
| REC/PB | 14/06 | 04 |
| FF/REW | 03/83 | 04 |

## ③ No DRUM FG/PG output

- VTR runs away and is set in emergency mode when the drum motor is rotated from the stop position regardless of mode.
  The processing taken after emergency mode is the same as that for "2 Drum motor is not rotated".

Emergency mode: 12 (LOADING)
31 (UNLOADING)
04 (REC)
06 (PB)
03 (FF)
83 (REW)

Emergency code: 05 or 07

## ④ Capstan motor is not rotated.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| LOADING | Shifted to loading end position about 3 seconds after CC DOWN SWITCH ON. At this time, all the switches other than EJECT, POWER SWITCH cannot be used. | 12 | 04 |
| UNLOADING | Loading motor is rotated slightly and tape guide is shifted slightly in unload direction for emergency loading. | 31 | 04 |
| REC/PB | Set in emergency mode about 2 seconds later. | 04/06 | 04 |
| FF/REW | Set in emergency mode about 2 seconds later. | 03/83 | 04 |

**[Emergency loading]**

When trouble arises, loading operation is effected to the normal loading end position. In this mode, all the switches other than POWER, EJECT SWITCH cannot be used.
At this time, EJECT operation is effected only once.
If this is not effected correctly, all the switches other than POWER SWITCH cannot be used.

## ⑤ No capstan FG output

- Capstan motor runs away (REC/PB, FF/REW) and VTR is set in emergency mode about 1 second later (during loading/unloading, only the emergency mode/code are written).
- In the emergency mode, all the switches other than EJECT, POWER SWITCH cannot be used.

| Mode | Emergency mode | Emergency code |
|---|---|---|
| LOADING | 12 | 04 |
| UNLOADING | 31 | 04 |
| REC/PB | 14/06 | 04 |
| FF/REW | 03/83 | 04 |

## ⑥ Loading motor is not rotated.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| USE→ LOADING | Set in emergency mode about 20 seconds later, and cassette compartment is locked. | 12 | 01 |
| READY→ UNLOADING | Set in emergency mode about 12 seconds later. | 31 | 01 |
| READY→ REC/PB | Set in emergency mode about 10 seconds later. | 14/06 | 01 |
| READY→ FF/REW | Set in emergency mode about 10 seconds later. | 03/83 | 01 |

## ⑦ DEW

- All the switches other than POWER SWITCH and EJECT SWITCH cannot be used (this operation continues for about 1 hour at detection of DEW).
- Once it is ejected*, loading with cassette tape is impossible.
- At this time, tape stops if it is running.

***If cassette is ejected when DEW is detected, VTR is set in emergency eject mode.**

## ⑧ TAPE LED and TAPE TOP/END sensor are not operating.

### (1) TAPE LED is not lit.

- Cassette compartment with cassette is always discriminated, and the functions switches (other than REC) of the tape drive system cannot be used even when cassette is not inserted.

- Cassette which has reached the tape end cannot be loaded.

Emergency mode : 12
Emergency code : 07

- Tape top/end cannot be detected and VTR is set in emergency mode at tape top/end.

Emergency mode : 03 (FF), 04 (REC), 06 (PB), 46 (CUE), 56 (REV), 83 (REW)......etc.
Emergency code : 07, 03
→ Reel emergency
→ Drum motor stops rotating due to tape tension and
VTR is set in emergency mode.

## ⑥ Loading motor is not rotated.

| Mode | Operation after fault detection | Emergency mode | Emergency code |
|---|---|---|---|
| USE→<br>LOADING | Set in emergency mode about 20 seconds later, and cassette compartment is locked. | 12 | 01 |
| READY→<br>UNLOADING | Set in emergency mode about 12 seconds later. | 31 | 01 |
| READY→<br>REC/PB | Set in emergency mode about 10 seconds later. | 14/06 | 01 |
| READY→<br>FF/REW | Set in emergency mode about 10 seconds later. | 03/83 | 01 |

## ⑦ DEW

- All the switches other than POWER SWITCH and EJECT SWITCH cannot be used (this operation continues for about 1 hour at detection of DEW).
- Once it is ejected*, loading with cassette tape is impossible.
- At this time, tape stops if it is running.

*If cassette is ejected when DEW is detected, VTR is set in emergency eject mode.

## ⑧ TAPE LED and TAPE TOP/END sensor are not operating.

### (1) TAPE LED is not lit.

- Cassette compartment with cassette is always discriminated, and the functions switches (other than REC) of the tape drive system cannot be used even when cassette is not inserted.

- Cassette which has reached the tape end cannot be loaded.

  Emergency mode : 12
  Emergency code : 07

- Tape top/end cannot be detected and VTR is set in emergency mode at tape top/end.

  Emergency mode : 03 (FF), 04 (REC), 06 (PB), 46 (CUE), 56 (REV), 83 (REW)......etc.
  Emergency code : 07, 03

  03 → Reel emergency

  07 → Drum motor stops rotating due to tape tension and VTR is set in emergency mode.

### (2) TAPE TOP SENSOR is not operating.

- When cassette is not inserted into cassette compartment, it is erroneously discriminated that a tape end cassette is inserted into the cassette compartment. Therefore, cassette compartment opens immediately after closing it, so loading operation is not effected unless it is closed again (for shifting to END mode).
- Since it is discriminated that a tape end cassette is inserted, REWIND SWITCH is operated when cassette is not inserted.
- When cassette is inserted, tape top cannot be detected so VTR is set in emergency mode at the tape top.

  Emergency mode : 56 (REVIEW), 83 (REWIND), B5 (EDIT SEARCH-)
  Emergency code : 03

### (3) TAPE END SENSOR is not operating.

- When cassette is not inserted into cassette compartment, it is erroneously discriminated that a tape top cassette is inserted. Therefore, PLAY, FF SWITCH are operated when cassette is not inserted.
- Cassette which has reached tape end cannot be loaded.

  Emergency mode : 12
  Emergency code : 07
- When cassette is inserted, tape end cannot be detected so VTR is set in emergency mode at tape end.

  Emergency mode : 03 (FF), 04 (REC), 06 (PB), 46 (CUE), A5 (EDIT SEARCH+)
  Emergency code : 07

  ↳ Drum motor stops rotating due to tape tension
  and VTR is set in emergency mode.

### (2) TAPE TOP SENSOR is not operating.

- When cassette is not inserted into cassette compartment, it is erroneously discriminated that a tape end cassette is inserted into the cassette compartment. Therefore, cassette compartment opens immediately after closing it, so loading operation is not effected unless it is closed again (for shifting to END mode).
- Since it is discriminated that a tape end cassette is inserted, REWIND SWITCH is operated when cassette is not inserted.
- When cassette is inserted, tape top cannot be detected so VTR is set in emergency mode at the tape top.

  Emergency mode : 56 (REVIEW), 83 (REWIND), B5 (EDIT SEARCH-)
  Emergency code : 03

### (3) TAPE END SENSOR is not operating.

- When cassette is not inserted into cassette compartment, it is erroneously discriminated that a tape top cassette is inserted. Therefore, PLAY, FF SWITCH are operated when cassette is not inserted.
- Cassette which has reached tape end cannot be loaded.

  Emergency mode : 12
  Emergency code : 07

- When cassette is inserted, tape end cannot be detected so VTR is set in emergency mode at tape end.

  Emergency mode : 03 (FF), 04 (REC), 06 (PB), 46 (CUE), A5 (EDIT SEARCH+)
  Emergency code : 07

  → Drum motor stops rotating due to tape tension
  and VTR is set in emergency mode.

SONY®

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**Sony Corporation**
**Consumer A & V Products Company**
**Personal A & V Products Div.**

**English**
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**Quality Engineering Dept.**

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**Consumer A & V Products Company**
**Personal A & V Products Div.**

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Quality Engineering Dept.

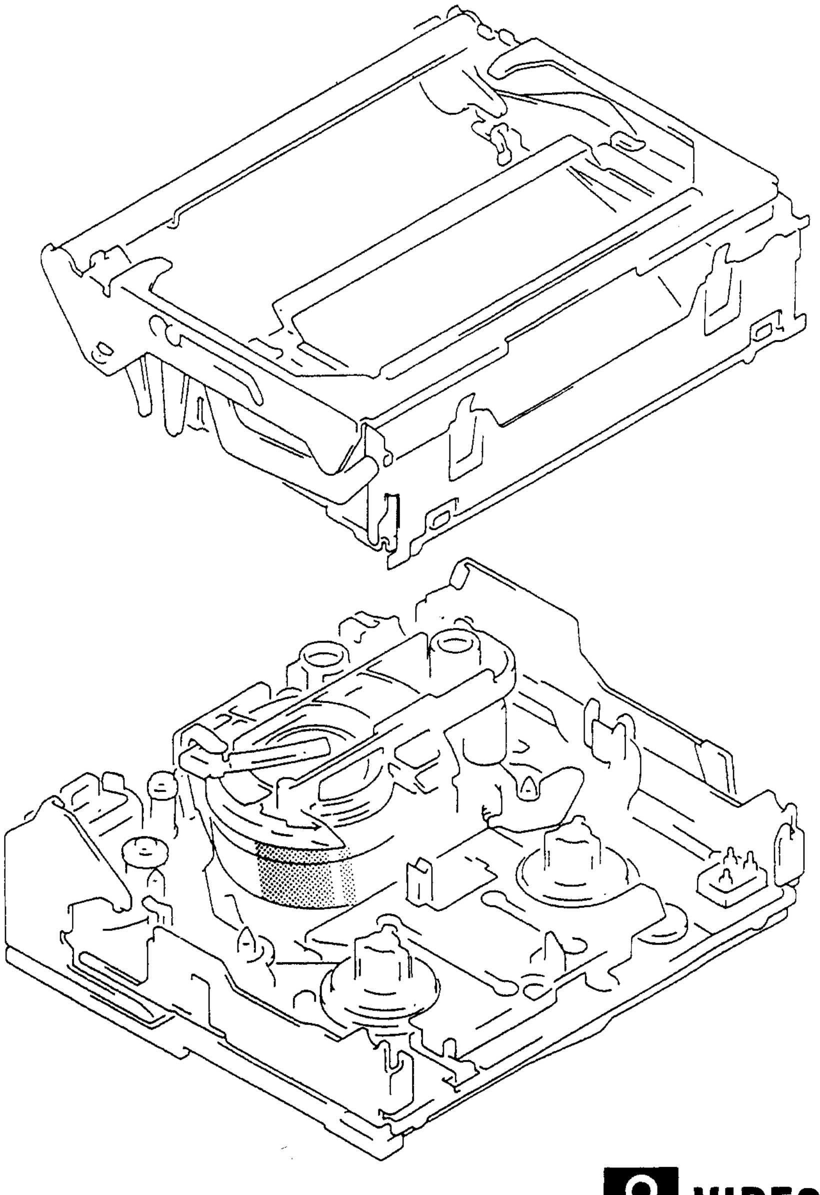
# 8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ

V12995

## A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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# 1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

## 1-1. CASSETTE COMPARTMENT ASSEMBLY

### 1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow 🅐 to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow 🅑.
4) With the cassette compartment assembly ❺ pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively. In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.

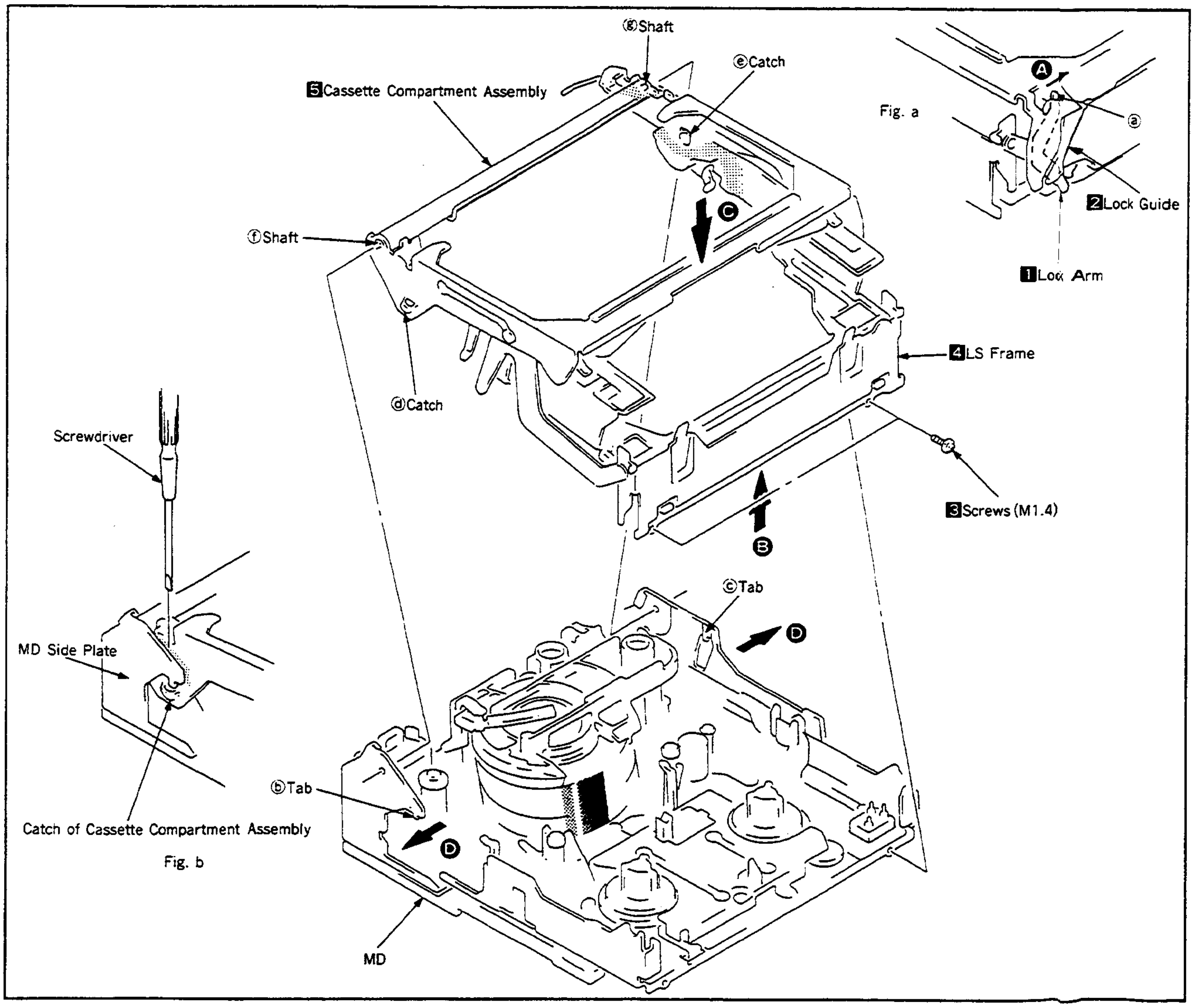

ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
🅐
ⓐ
❷Lock Guide
❶Lock Arm
ⓕShaft
🅒
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
🅑
ⓒTab
🅓
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
🅓
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the [USE] mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

**Note** : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

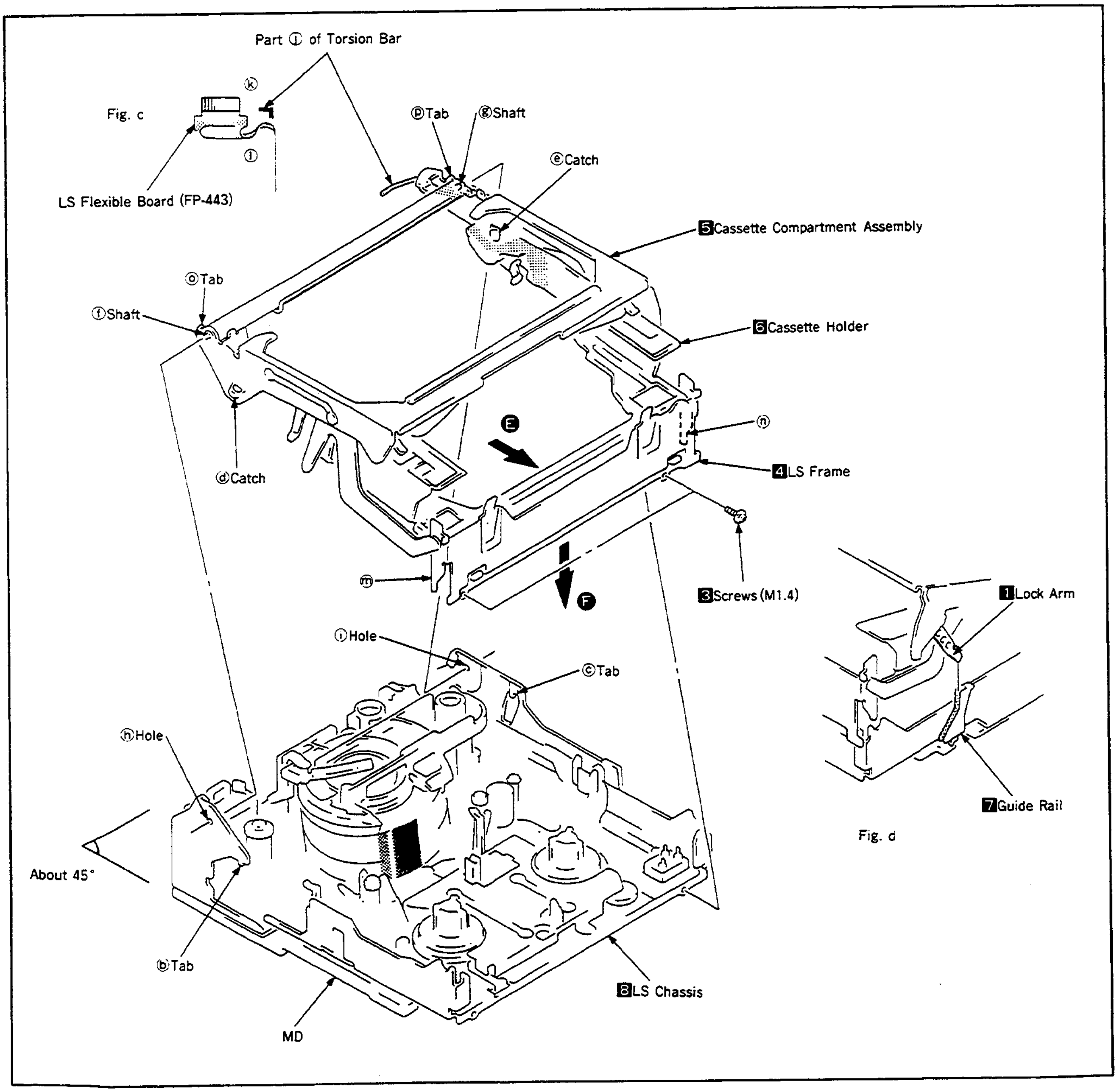

Part ⓙ of Torsion Bar
Fig. c
ⓚ
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
ⓝ
🅔
ⓓCatch
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
About 45°
❼Guide Rail
Fig. d
ⓑTab
❽LS Chassis
MD

Fig. 2

## 1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

**Note** : Press the asterisked (∗) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

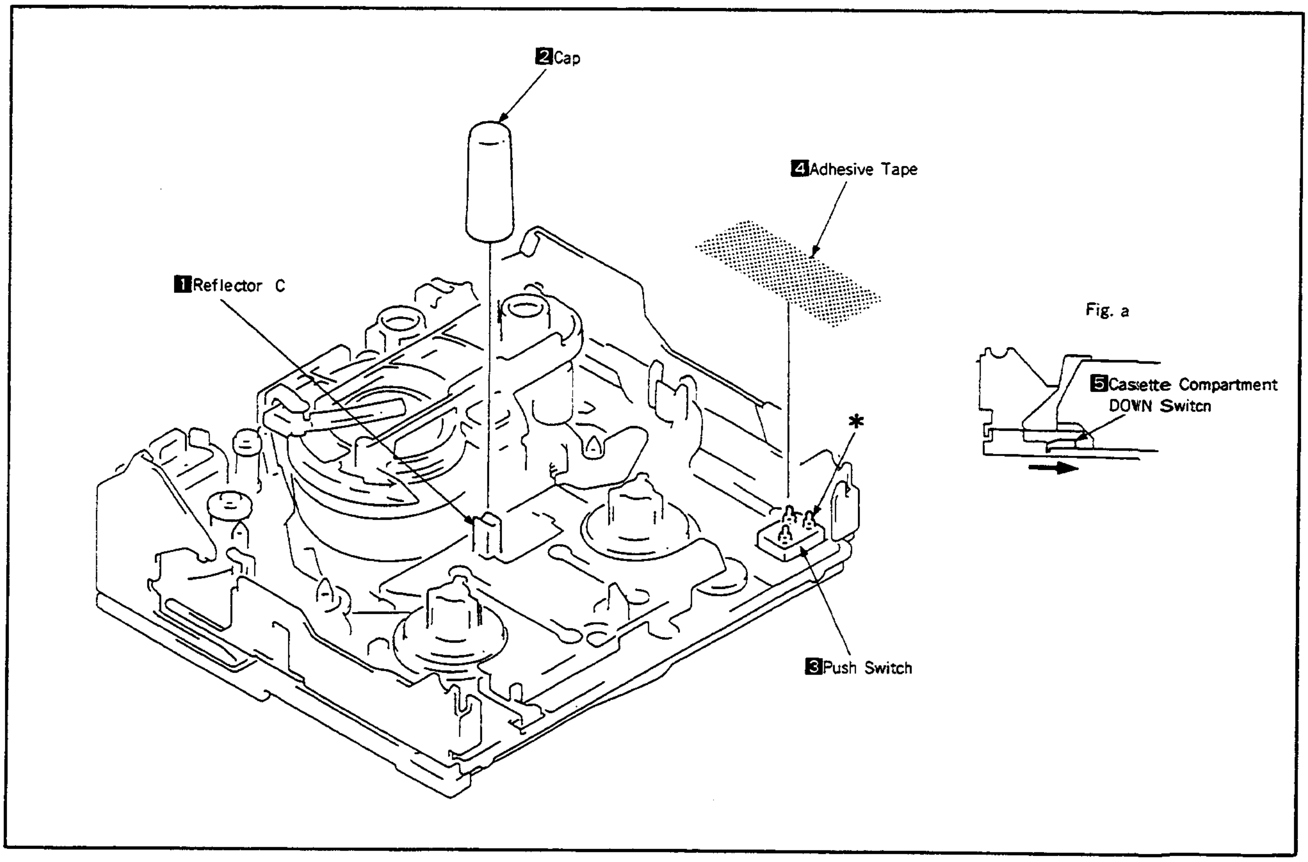

2 Cap
4 Adhesive Tape
1 Reflector C
Fig. a
5 Cassette Compartment DOWN Switch
∗
3 Push Switch

Fig. 3

## 1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

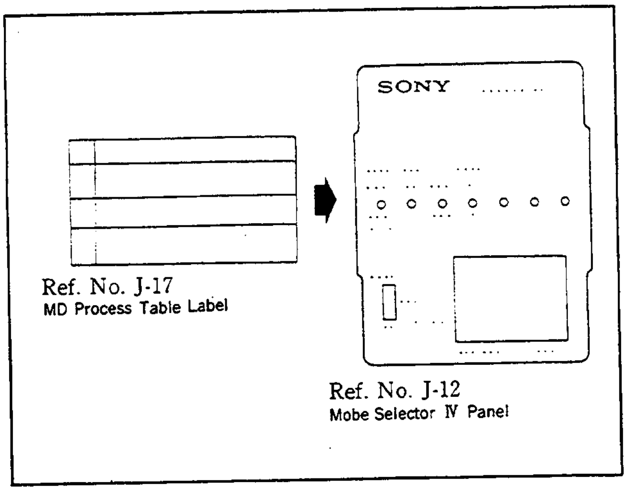

Ref. No. J-17
MD Process Table Label
SONY
Ref. No. J-12
Mobe Selector IV Panel

Fig. 4

### 1 Construction (Fig.5)

### 2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

### 3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

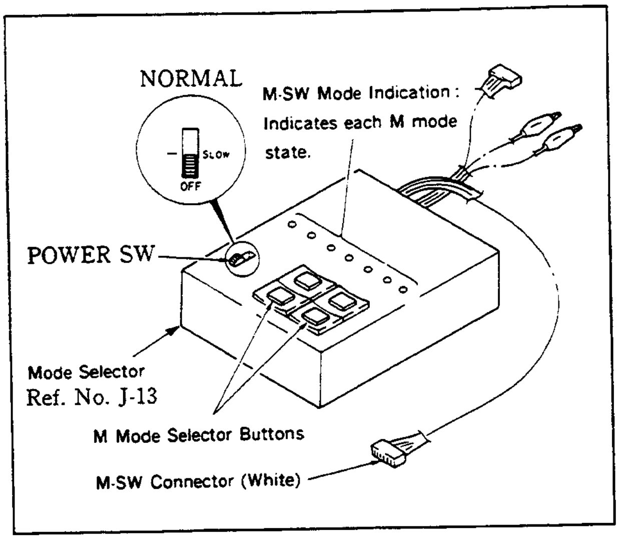

NORMAL
SLOW
OFF
POWER SW
M-SW Mode Indication : Indicates each M mode state.
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-FX410 series

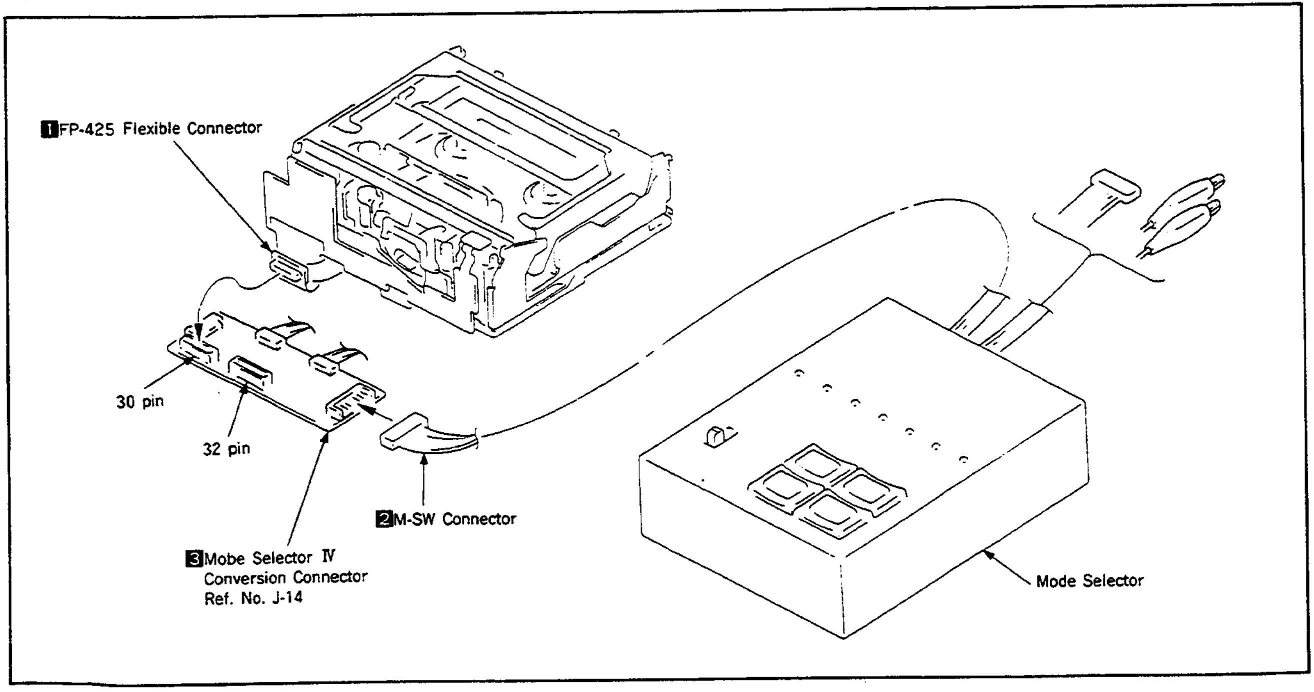
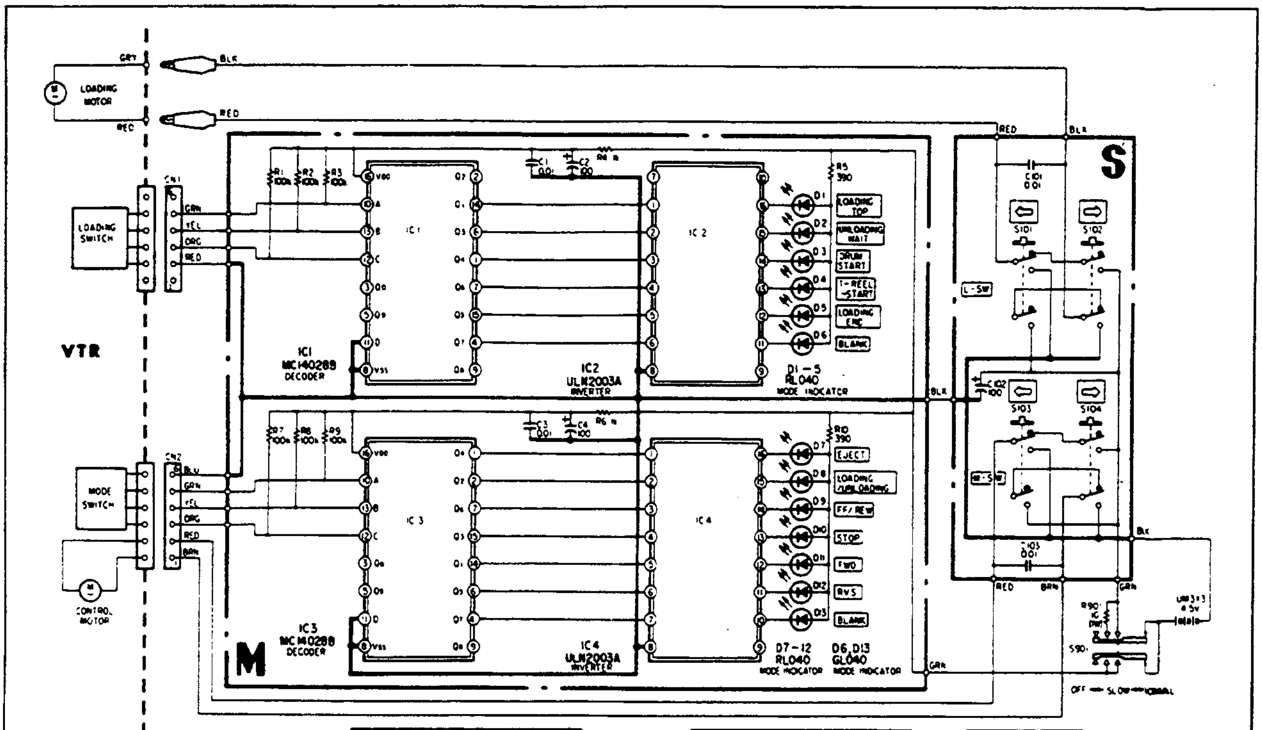

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector IV
Conversion Connector
Ref. No. J-14
Mode Selector

Fig. 6

## 1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
CN1
LOADING SWITCH
GRN
YEL
ORG
RED
VTR
CN2
BLU
BRN
MODE SWITCH
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 .001
C2 100
R4 1k
R5 390
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
D1 – 5 RL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
R7 100k
R8 100k
R9 100k
C3 .001
C4 100
R6 1k
R10 390
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
D7 – 12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
EJECT
LOADING /UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
S
M
C101 .001
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 .001
R901
UM3×3 4.5V
S901
OFF — SLOW — NORMAL

M-SW (IC 3)

| DECODER INPUT | | | MODE | LED NO |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | FWD | D11 |
| 0 | 1 | 0 | LOADING/UNLOADING | D8 |
| 0 | 1 | 1 | STOP | D10 |
| 1 | 0 | 0 | EJECT | D7 |
| 1 | 0 | 1 | RVS | D12 |
| 1 | 1 | 0 | FF/REW | D9 |
| 1 | 1 | 1 | BLANK | D13 |

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

| DECODER INPUT | | | MODE | LED NO |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | LOADING TOP | D1 |
| 0 | 1 | 0 | | |
| 0 | 1 | 1 | LOADING END | D5 |
| 1 | 0 | 0 | DRUM START | D3 |
| 1 | 0 | 1 | UNLOADING WAIT | D2 |
| 1 | 1 | 0 | T-REEL-START | D4 |
| 1 | 1 | 1 | BLANK | D6 |

| SWITCH | | DIRECTION OF MOTOR REVOLUTION |
|---|---|---|
| ⇦ | ⇨ | |
| OFF | OFF | STOP |
| ON | OFF | ⇦ |
| OFF | ON | ⇨ |

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

## 1-5. MODE SELECTOR PARTS LIST

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | CAPACITOR | | |
| C1 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C2 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C3 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C4 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C101 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C102 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C103 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| | | DIODE | | |
| D1 | 8-719-812-31 | DIODE TLR123 | | |
| D2 | 8-719-812-31 | DIODE TLR123 | | |
| D3 | 8-719-812-31 | DIODE TLR123 | | |
| D4 | 8-719-812-31 | DIODE TLR123 | | |
| D5 | 8-719-812-31 | DIODE TLR123 | | |
| D6 | 8-719-812-33 | DIODE TLG123A | | |
| D7 | 8-719-812-31 | DIODE TLR123 | | |
| D8 | 8-719-812-31 | DIODE TLR123 | | |
| D9 | 8-719-812-31 | DIODE TLR123 | | |
| D10 | 8-719-812-31 | DIODE TLR123 | | |
| D11 | 8-719-812-31 | DIODE TLR123 | | |
| D12 | 8-719-812-31 | DIODE TLR123 | | |
| D13 | 8-719-812-33 | DIODE TLG123A | | |

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | IC | | |
| IC1 | 8-752-240-28 | IC TC4028BP | | |
| IC2 | 8-752-120-03 | IC $\mu$PA2003C | | |
| IC3 | 8-759-240-28 | IC TC4028BP | | |
| IC4 | 8-759-120-03 | IC $\mu$PA2003C | | |
| | | RESISTOR | | |
| R1 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R2 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R3 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R4 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R5 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R6 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R7 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R8 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R9 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R10 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R901 | 1-214-594-00 | METAL | 10 | 1W |

## 2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

### 2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

**Note** : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

### 2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

**Note** : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

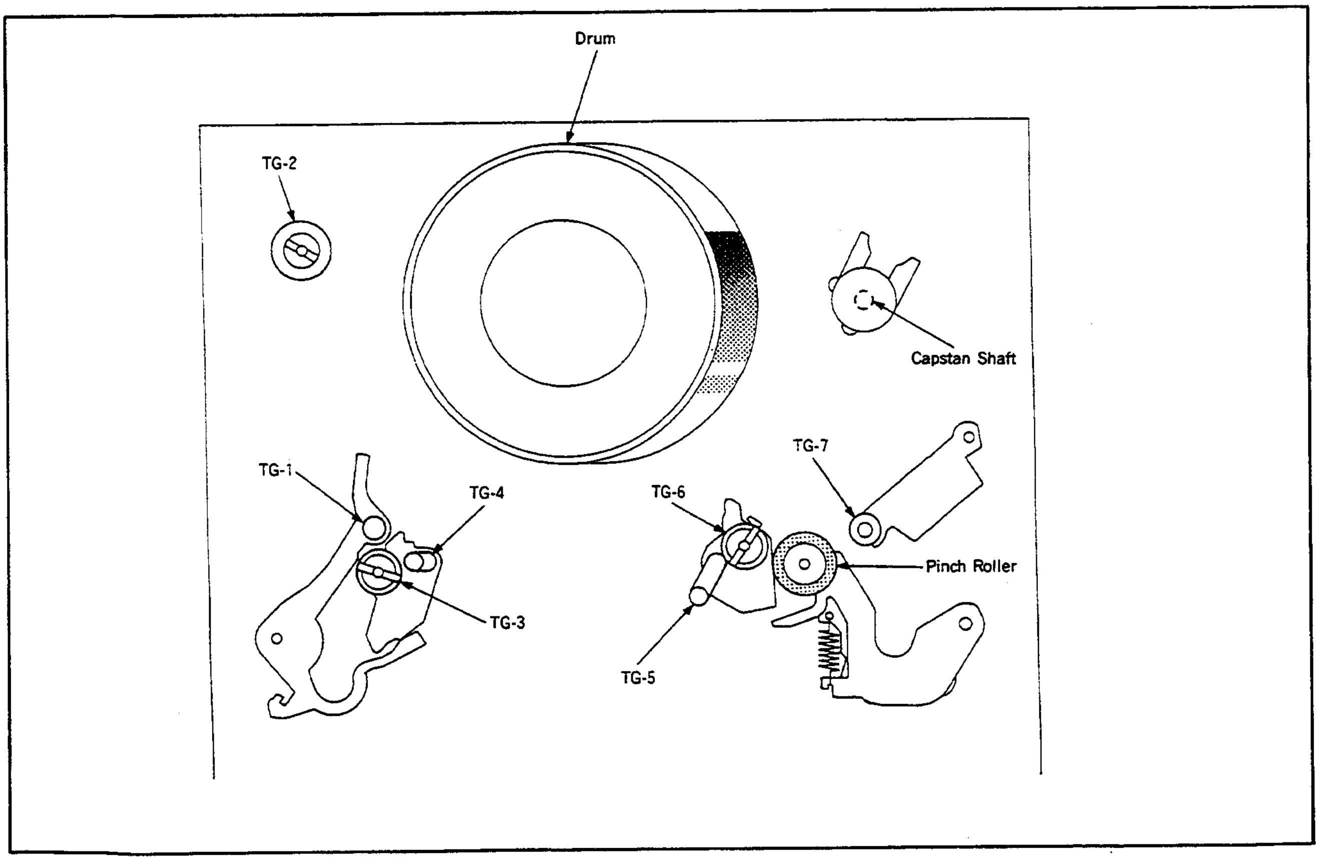


Fig. 7

### 2-3. PERILDIC CHECK ITEMS

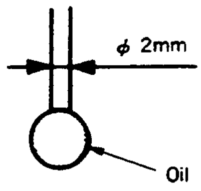
| | **Location of Maintenance and check** | **Hours of Use (H)** | | | | | | | | | | **Remarks** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **500** | **1000** | **1500** | **2000** | **2500** | **3000** | **3500** | **4000** | **4500** | **5000** | |
| Tape trans-portion System | Cleaning of tape path surface | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| | Cleaning and degaussing of rotary assembly | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| Driving System | Relay belt | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | 3-944-539-01 |
| | Capstan shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | Be adsolutely careful not to get oil on the tape path surface. |
| | Relay pulley shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | |
| | Loading motor | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | A-7040-304-A |
| Performance Confirmation | Abnormal noise | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | |
| | Back tension measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | Brake system | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | FWD. RVS torque measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |

○ : Cleaning ◎ : Oil ☆ : Confirmation

**Note :** When overhauling, refer to the items above to replace parts.

**Note :** Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

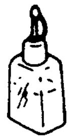
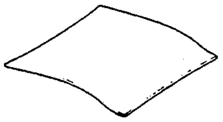
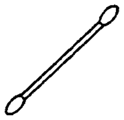
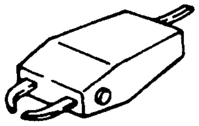
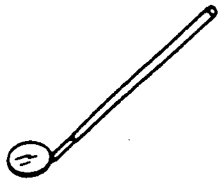
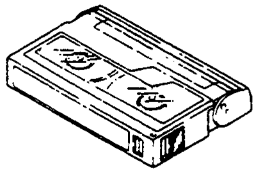
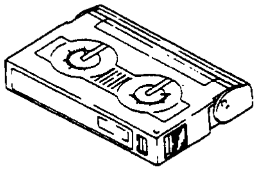
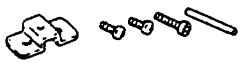
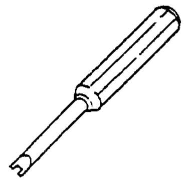
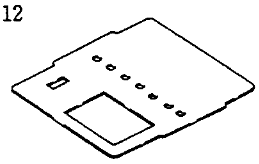
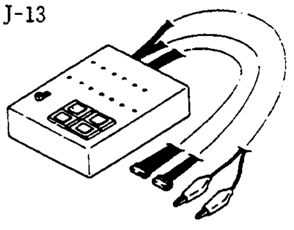
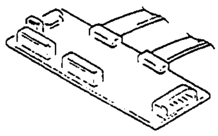
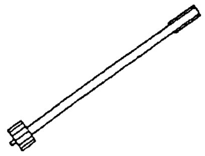
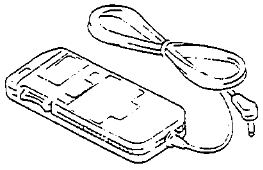
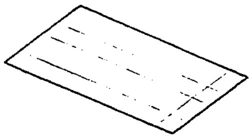


## 2-4. Service jigs list

| Ref. No. | Name | Part No. | Fixture No. | Usage and Others |
|---|---|---|---|---|
| J-1 | Cleaning fluid | Y-2031-001-0 | | |
| J-2 | Chamois cloth | 2-034-697-00 | | |
| J-3 | Super fine applicator<br>(Made by NIPPON APPLICATOR, P752D) | | | |
| J-4 | Head degausser | Widely available | | |
| J-5 | Small mirror for adjustment<br>Spare mirror | J-6080-029-A<br>J-6080-030-1 | SL-5052 | Tape path |
| J-6 | Alignment tape NTSC (WR5-1N)<br>PAL (WR5-1C) | 8-967-995-01<br>8-967-995-06 | | Tape path |
| J-9 | FWD and RVS winding torque cassette | J-6080-824-A | GD-2086 | |
| J-10 | Rotary drum jig | (Attached to the maintenance rotary upper drum) | | |
| J-11 | Screwdriver for tape path | J-6082-026-A | | For tape guide adjustment |
| J-12 | Mode selector Ⅳ panel | J-6082-105-A | | |
| J-13 | Mode selector | J-6080-825-A | | For all models |
| J-14 | Mode selector Ⅳ conversion connector | J-6082-167-A | | |
| J-15 | FWD B.T. adjusting driver | J-6082-182-A | | |
| J-16 | Adjusting remote controller | J-6082-053-B | | Tape path (Setting of PATH mode) |
| J-17 | MD process table label | J-6082-166-A | | |

Other equipment ● Oscilloscope

● Analog tester (20 kΩ)

| | | | |
|---|---|---|---|
| J-1<br> | J-2<br> | J-3<br> | J-4<br> |
| J-5<br> | J-6<br> | J-9<br> | J-10<br><br>(Attached to the maintenance rotary upper drum) |
| J-11<br> | J-12<br> | J-13<br> | J-14<br> |
| J-15<br> | J-16<br> | J-17<br> | |

## 3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

**Note** : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

**Note** : The modes in ☐ are those set by pressing the mode selector buttons.

### 3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

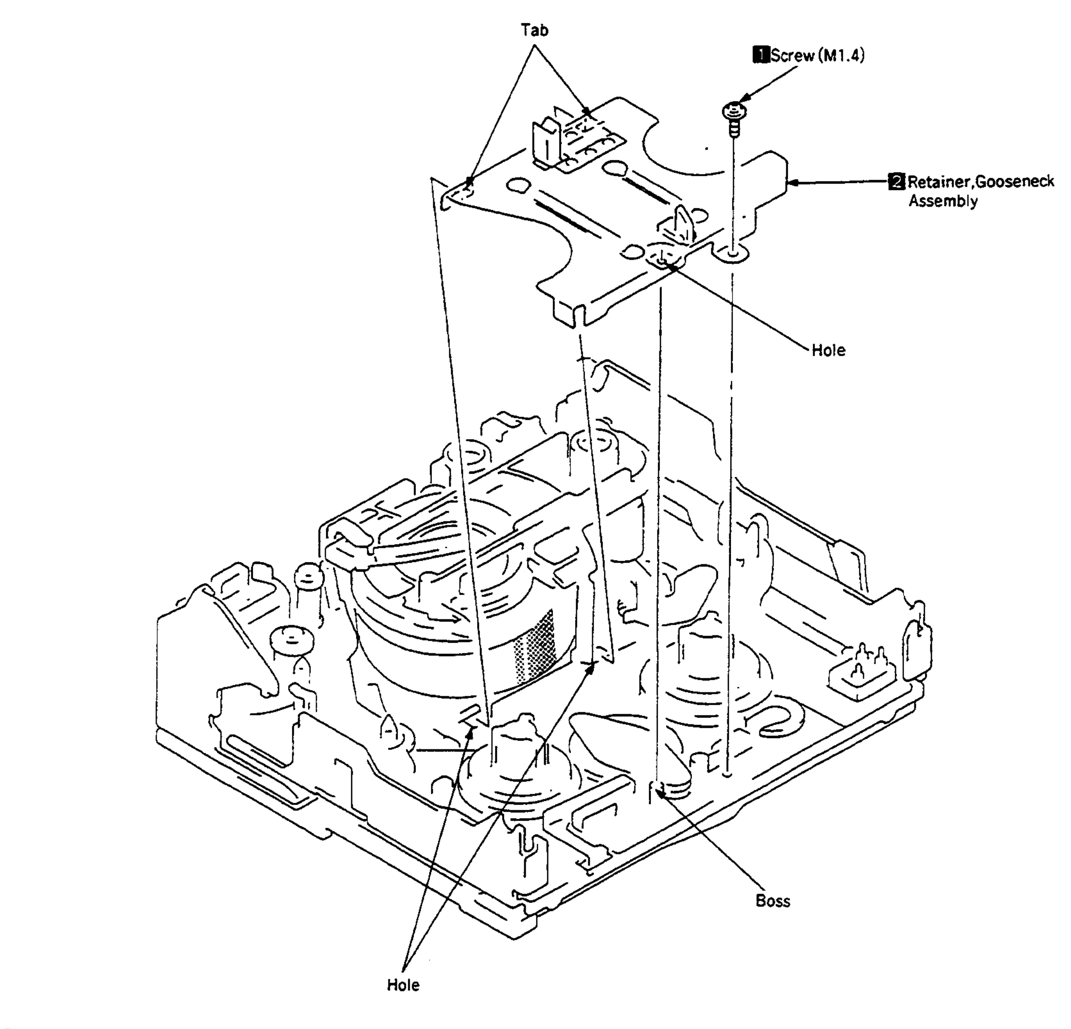


Fig. 8

### 3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

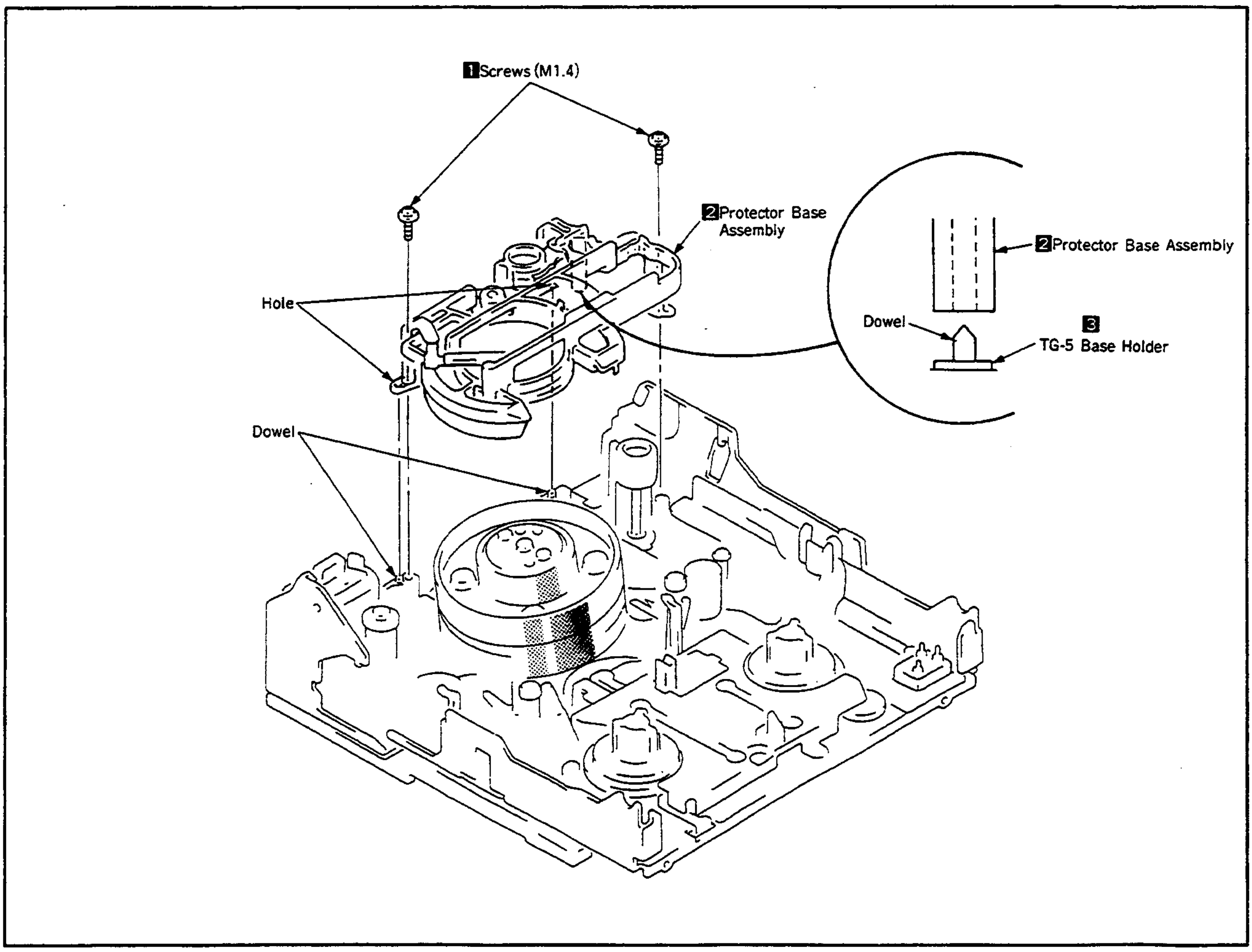

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸
TG-5 Base Holder

Fig. 9

## 3-3. DRUM ASSEMBLY (Fig. 10)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

**Note :** Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

### 2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

**Note :** Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

**Note :** Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

**Note :** In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

**Note :** After mounting, make tape path adjustment in Section 4.

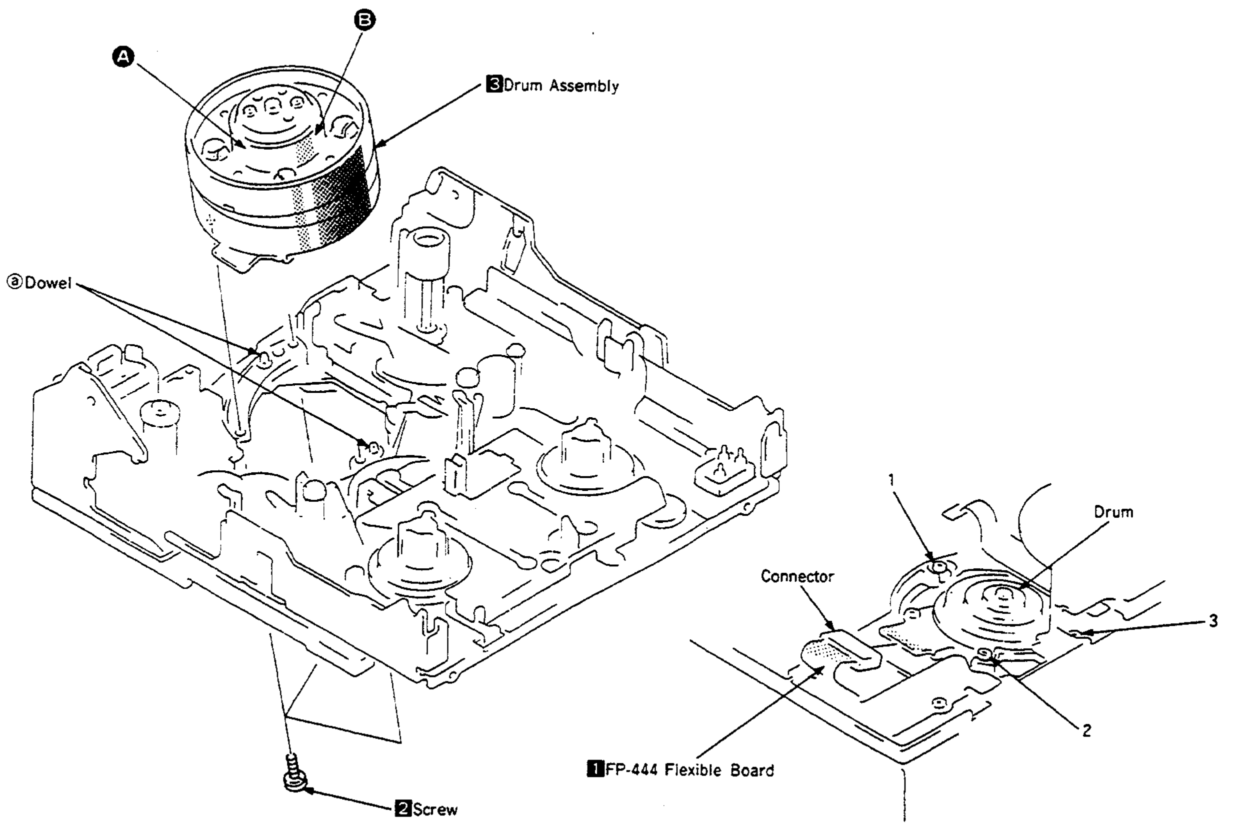


Fig. 10

### 3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

**Note** : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

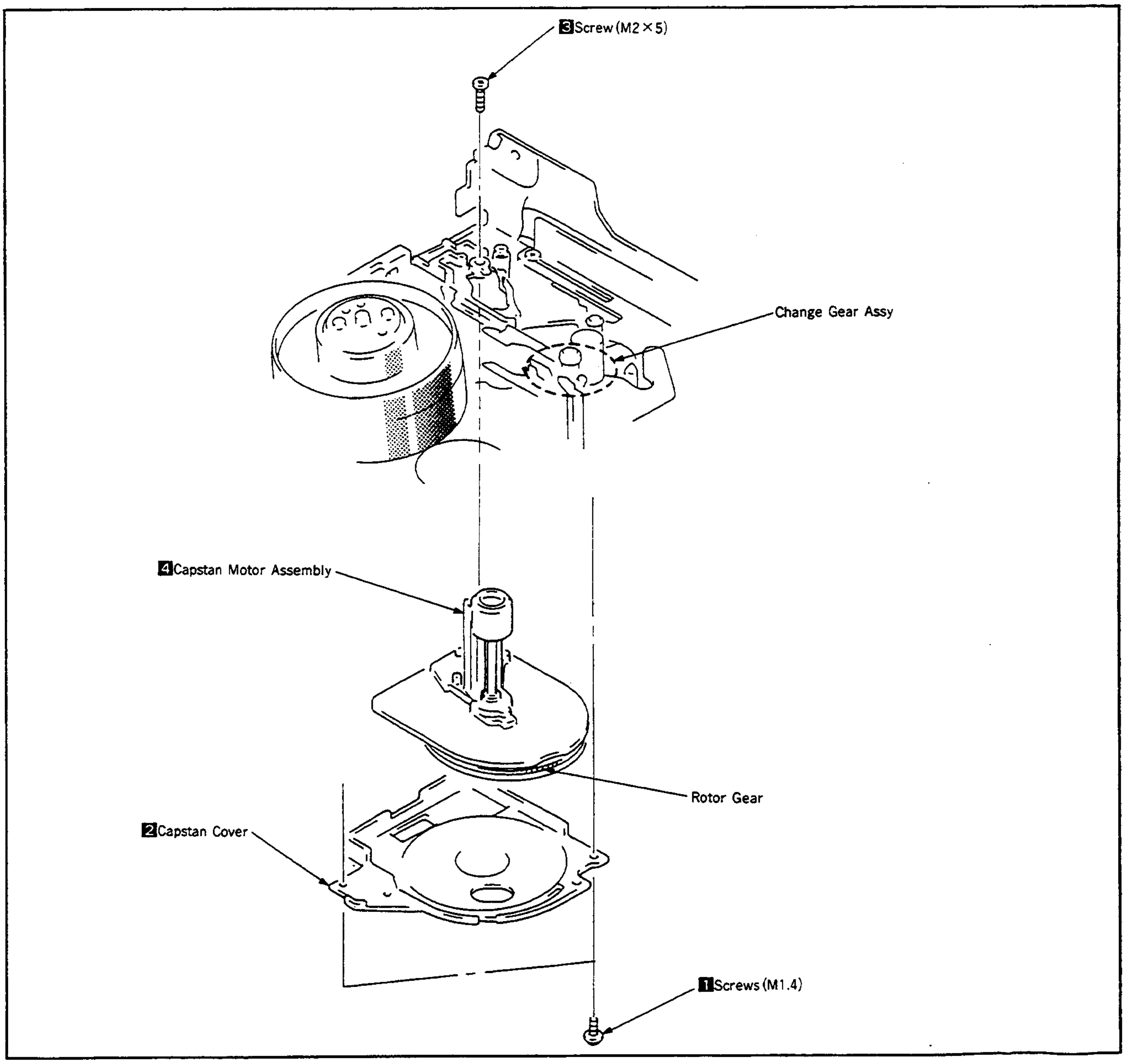

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

### 3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly ❶.
4) Remove the T soft assembly ❷, then the T soft arm ❸.

2. Mounting

1) Mount the T soft arm ❸ with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly ❷ with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly ❶ and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

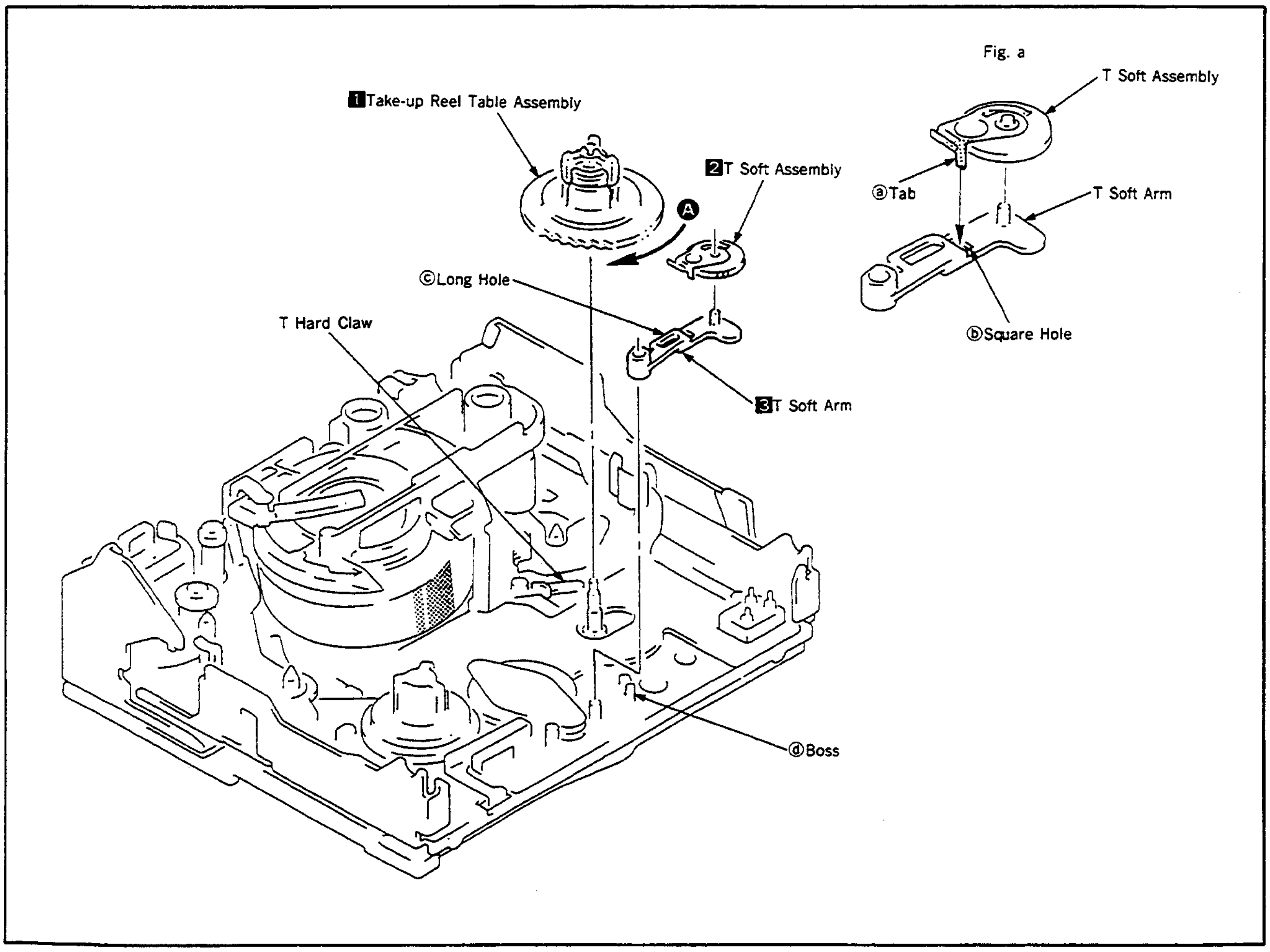


Fig. a
T Soft Assembly
❶Take-up Reel Table Assembly
❷T Soft Assembly
Ⓐ
ⓐTab
T Soft Arm
ⓒLong Hole
T Hard Claw
ⓑSquare Hole
❸T Soft Arm
ⓓBoss

Fig. 12

### 3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the $\boxed{\text{READY}}$ mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

2. Mounting

1) Select the $\boxed{\text{READY}}$ mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

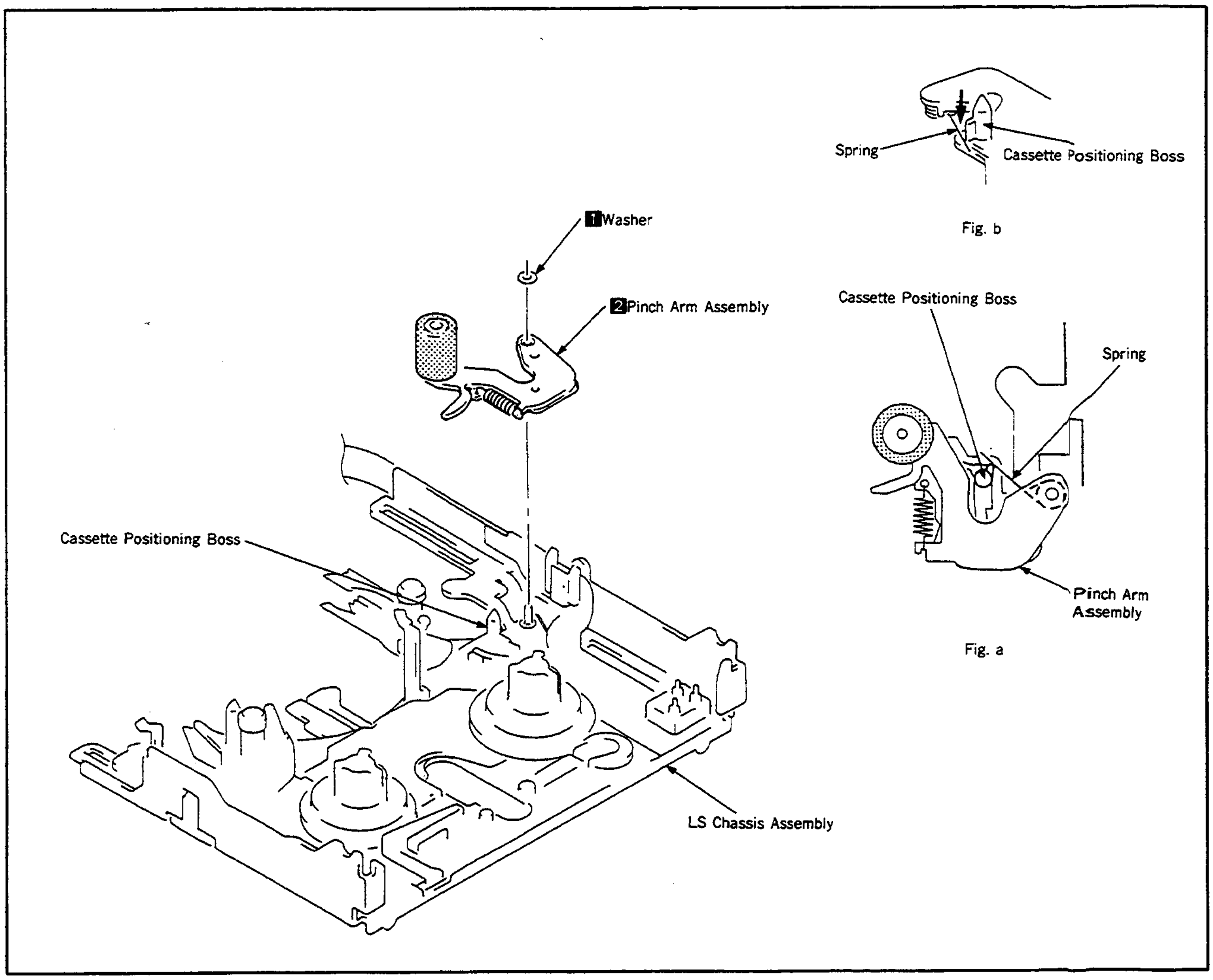

Spring
Cassette Positioning Boss
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Cassette Positioning Boss
Pinch Arm Assembly
LS Chassis Assembly

Fig. b

Fig. a

Fig. 13

## LS CHASSIS ASSEMBLY (Fig. 14)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw ❶, TG-5 base holder ❷, and LS flexible board ❸.
5) Remove a lock washer ❹, then the gooseneck as sembly ❺.
6) Remove four screws ❻, then the LS chassis assembly ❼.

### 2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly ❼ on the chassis.

**Note** : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws ❻.
6) Mount the LS flexible board ❸ and TG-5 base holder ❷,then tighten the screw ❶.
7) Mount the Gooseneck assembly ❺ and fix it with a washer ❹.

**Note** : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

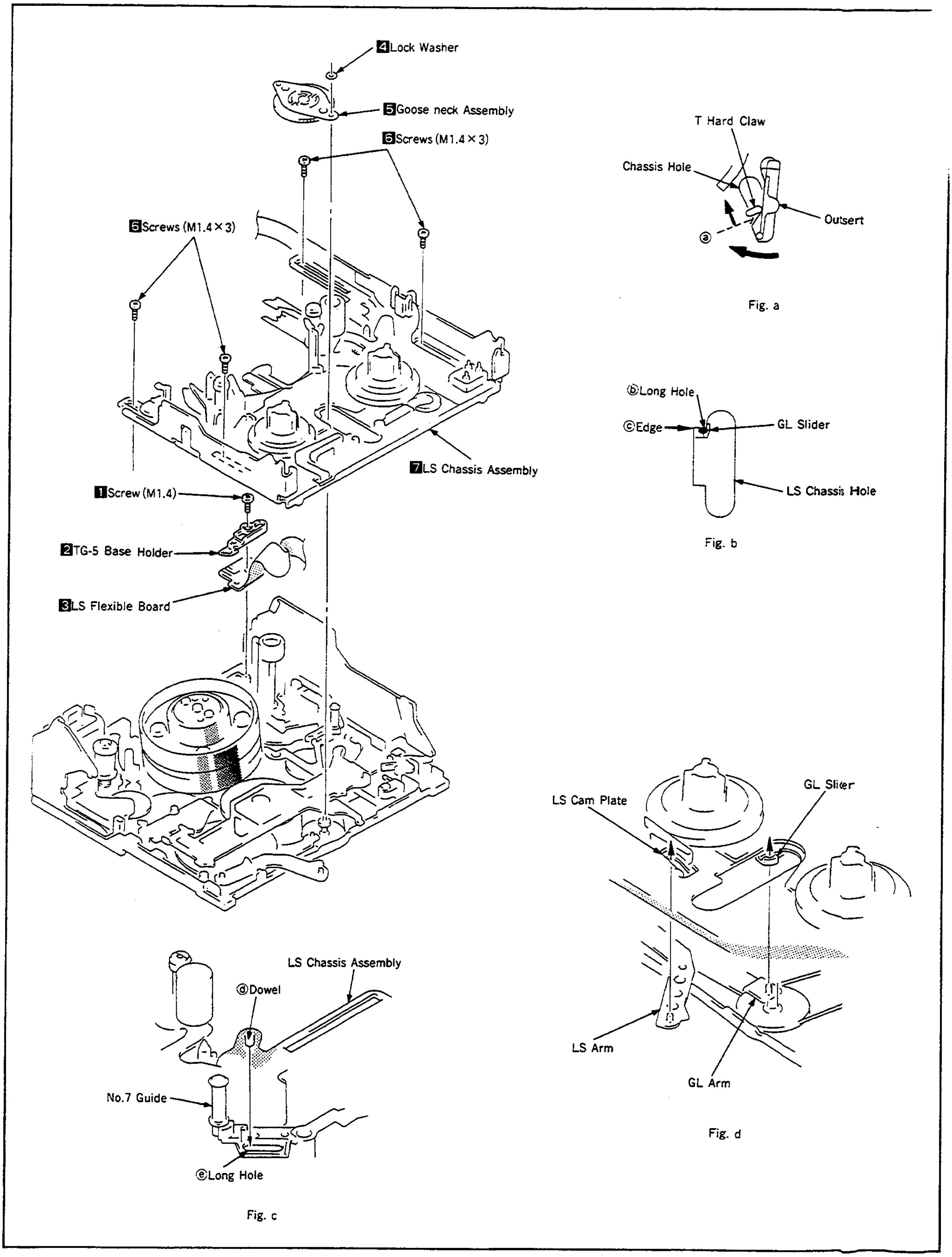

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4×3)
6 Screws (M1.4×3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑLong Hole
ⓒEdge
GL Slider
LS Chassis Hole
LS Cam Plate
GL Slier
LS Arm
GL Arm
LS Chassis Assembly
ⓓDowel
No.7 Guide
ⓔLong Hole

Fig. a

Fig. b

Fig. d

Fig. c

Fig. 14

## 3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

### 2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

**Note** : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note** : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

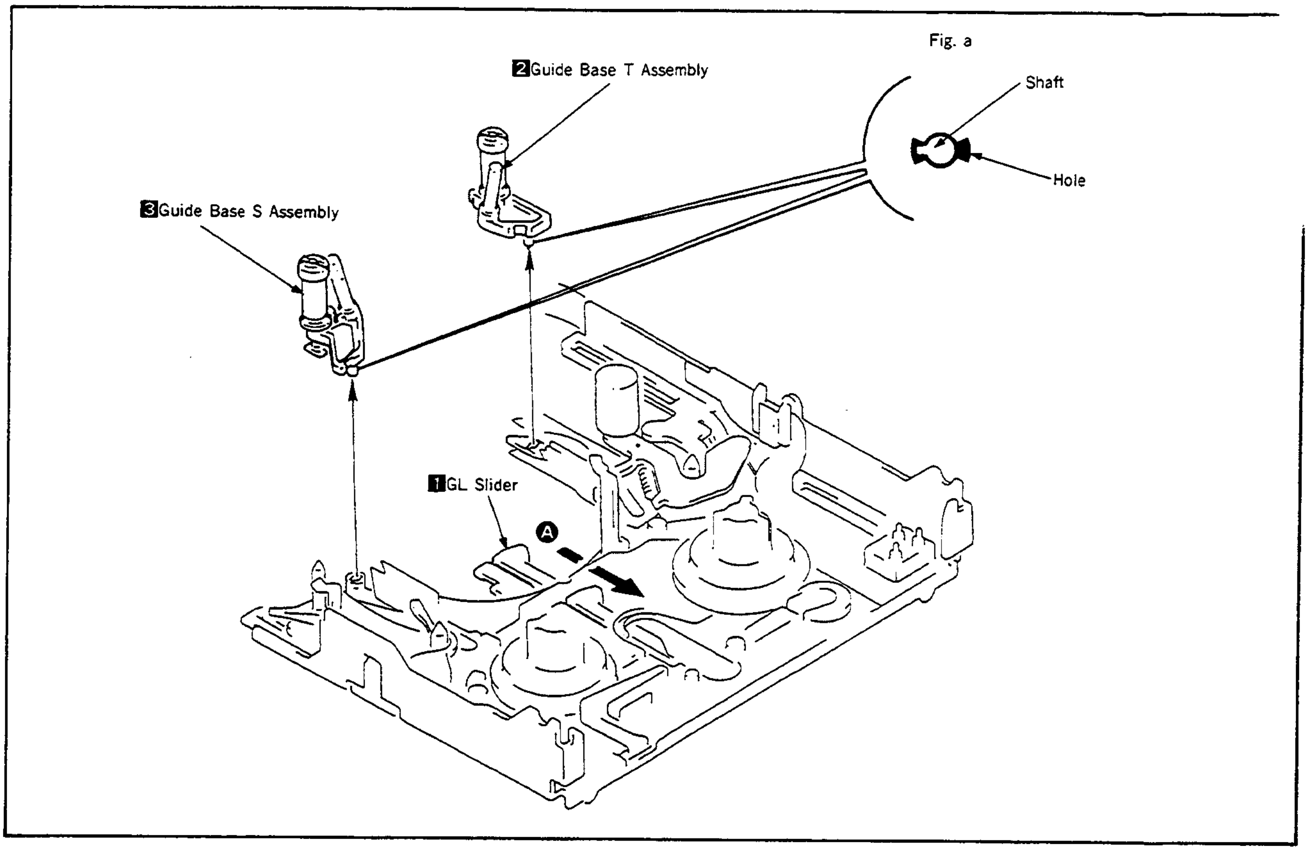


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

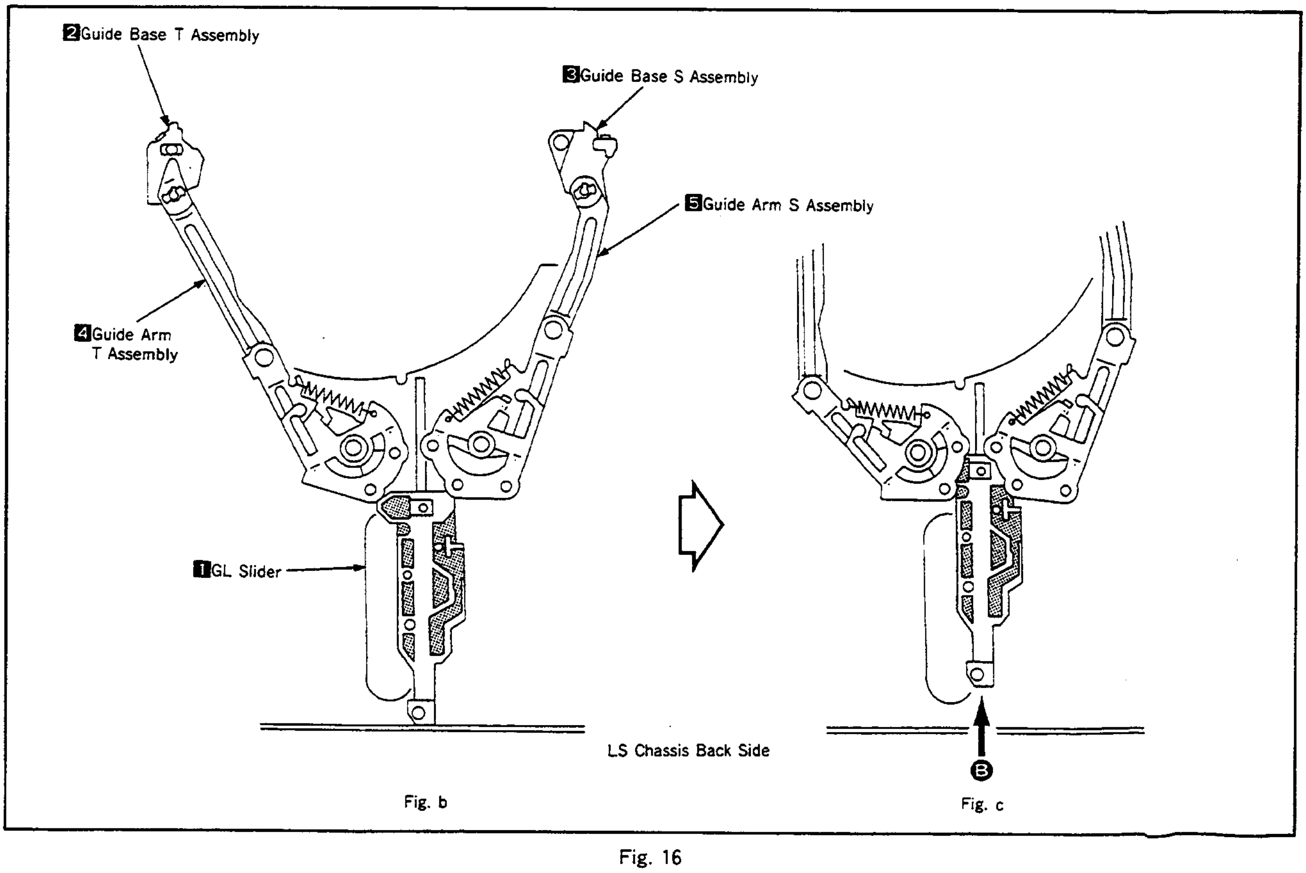

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

## 3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers 1, then the guide arm T assembly 2 and guide arm S assembly 3 respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

### 2. Mounting

1) Mount the guide arm T assembly 2 and guide arm S assembly 3, then fix them with a lock washer 1 respectively.

**Note :** Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

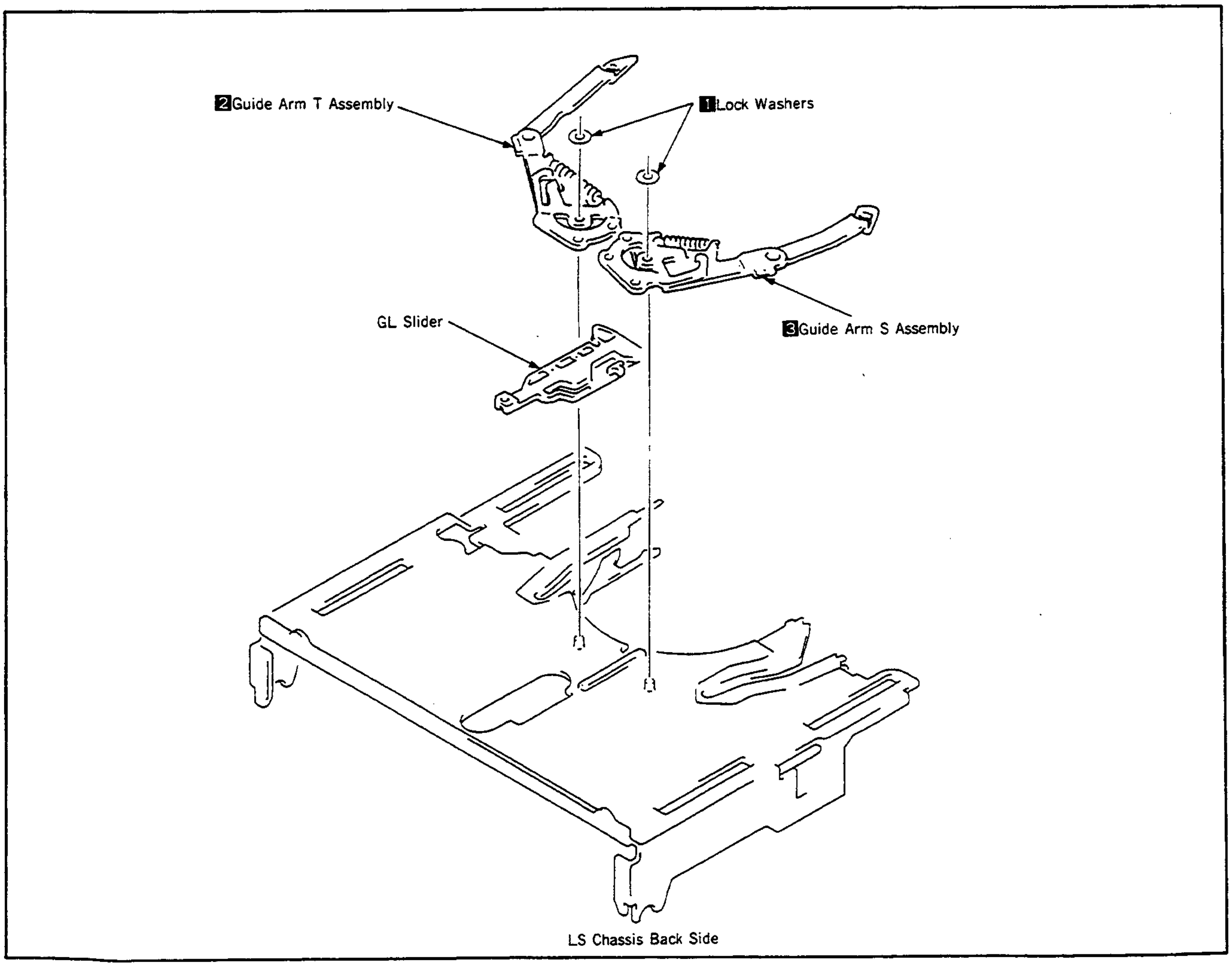


Fig. 17

## 3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow 🅐 direction so that its tab ⓑ can be disengaged (Fig. b).

### 2. Mounting

1) Pushing the S soft brake ❼ toward the arrow 🅑, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow 🅐 (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

**Note :** Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow 🅒 and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

**Note :** Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note :** At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

**Note :** Referring to 3-22, adjust the tension regulator position.

**Note :** Referring to 3-23, adjust the forward back tension.

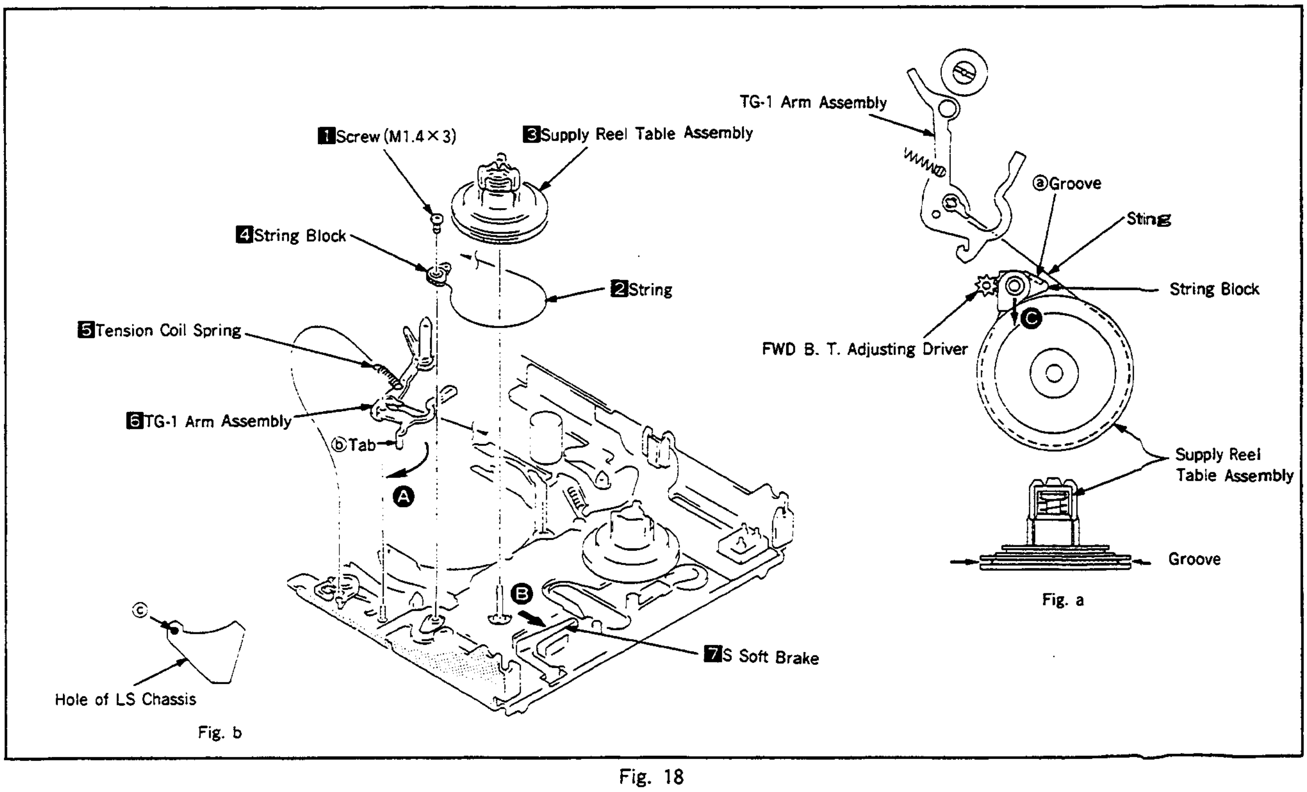

❶Screw (M1.4 × 3)
❸Supply Reel Table Assembly
❹String Block
❷String
❺Tension Coil Spring
❻TG-1 Arm Assembly
ⓑTab
🅐
🅑
❼S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐGroove
Sting
String Block
FWD B. T. Adjusting Driver
🅒
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

## 3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

### 1. Removal

1) Remove the TG-2 roller assembly **1** .
2) Remove a compression coil spring **2** .

### 2.Mounting

1) Insert a compression coil spring **2** into the boss on chassis.
2) Rotate gently the TG-2 roller assembly **1** until the screw is engaged.

### 3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

**Note** : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

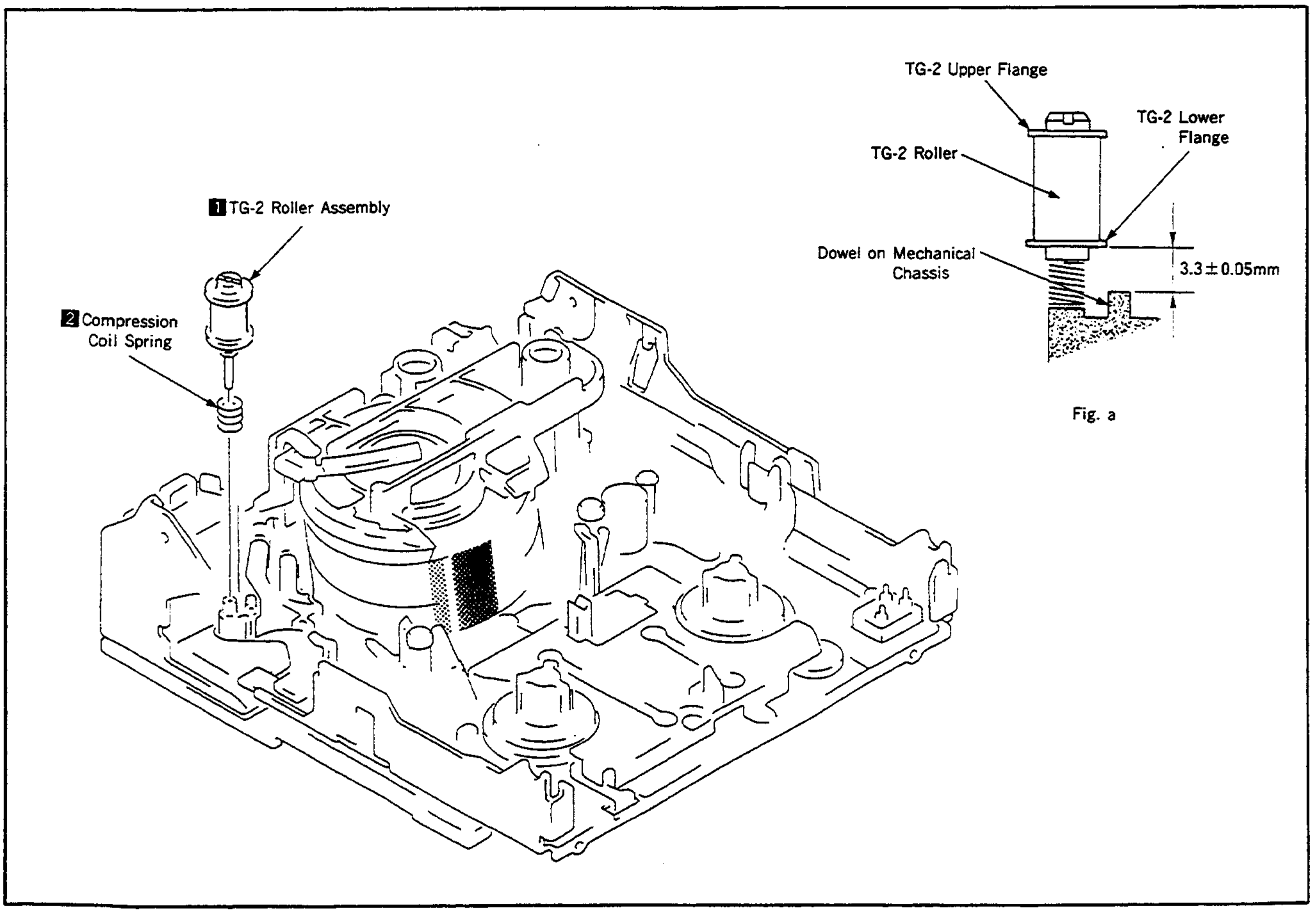

1 TG-2 Roller Assembly
2 Compression Coil Spring
TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a

Fig. 19

## 3-12. TG-7 ARM ASSEMBLY (Fig. 20)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

### 2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechani chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalchasis.
   *Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

**Note** : After mounting, perform 4. TAPE PATH ADJUSTMENT.

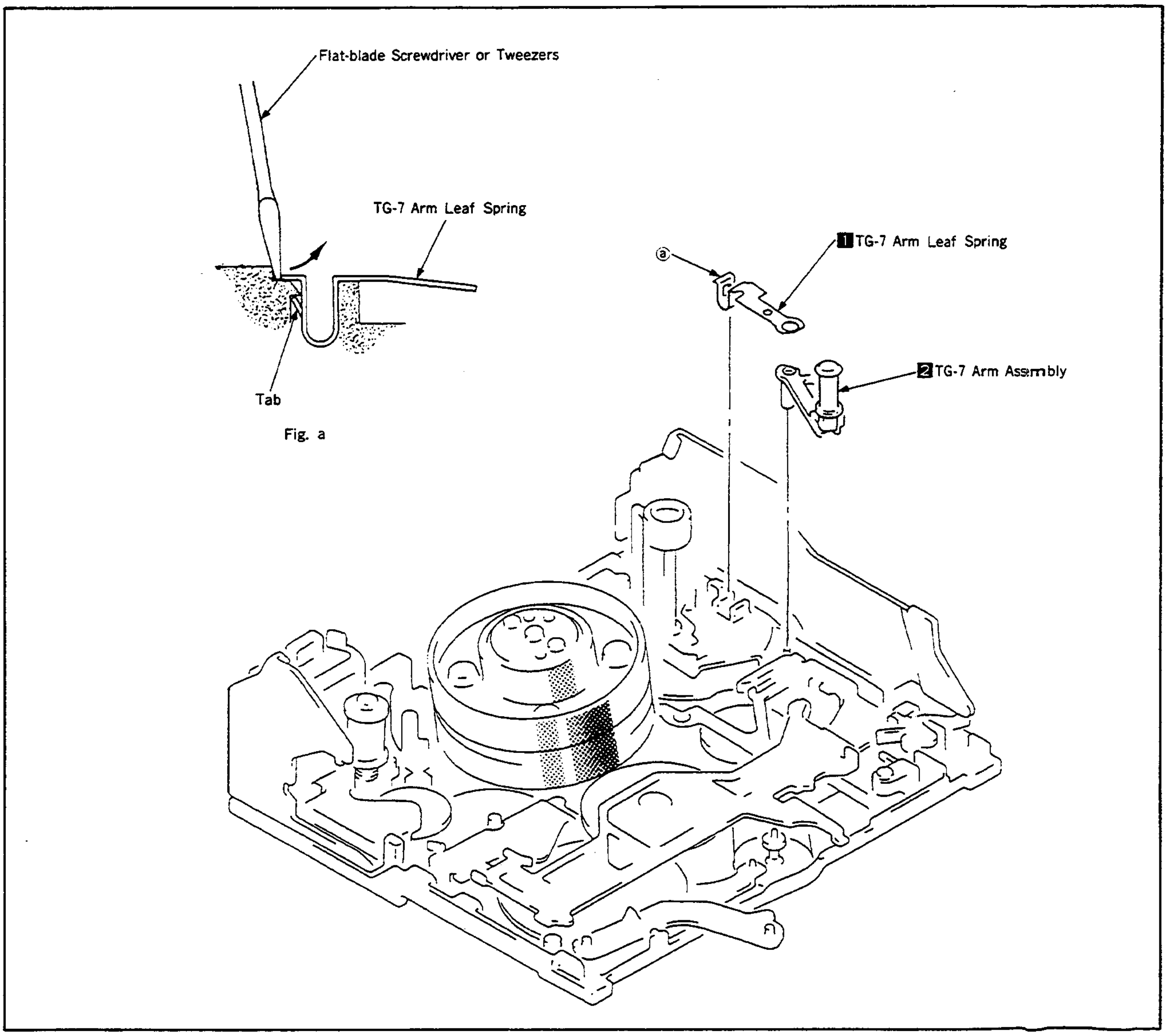


Fig. 20

## 3 . LM MOTOR ASSEMBLY (Fig. 21)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the [LOAD] mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

### 2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

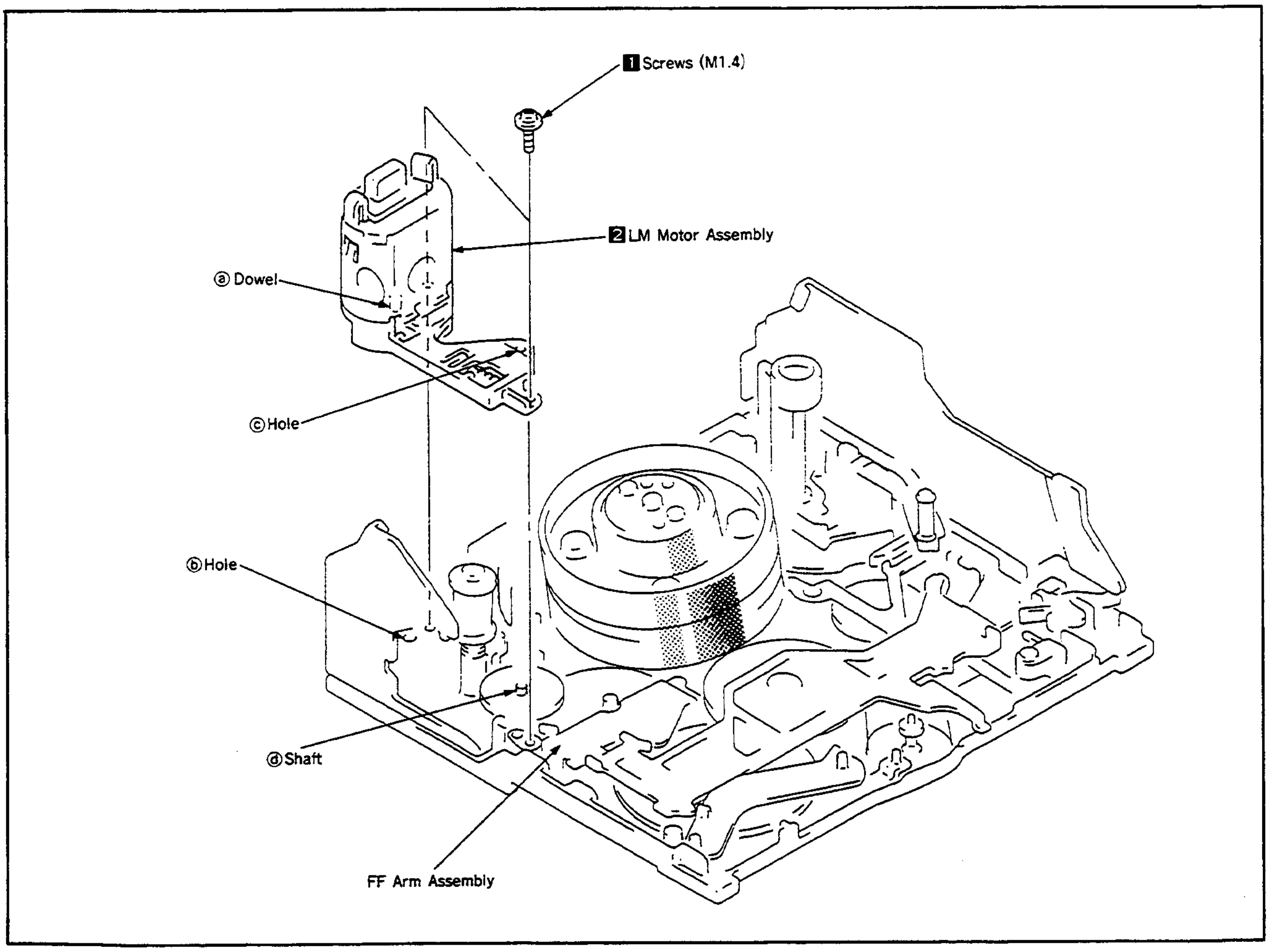


Fig. 21

## 3-14. LS ARM (Fig. 22)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

**Note** : Take care not to drop the LS roller ❷.

### 2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

**Note** : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

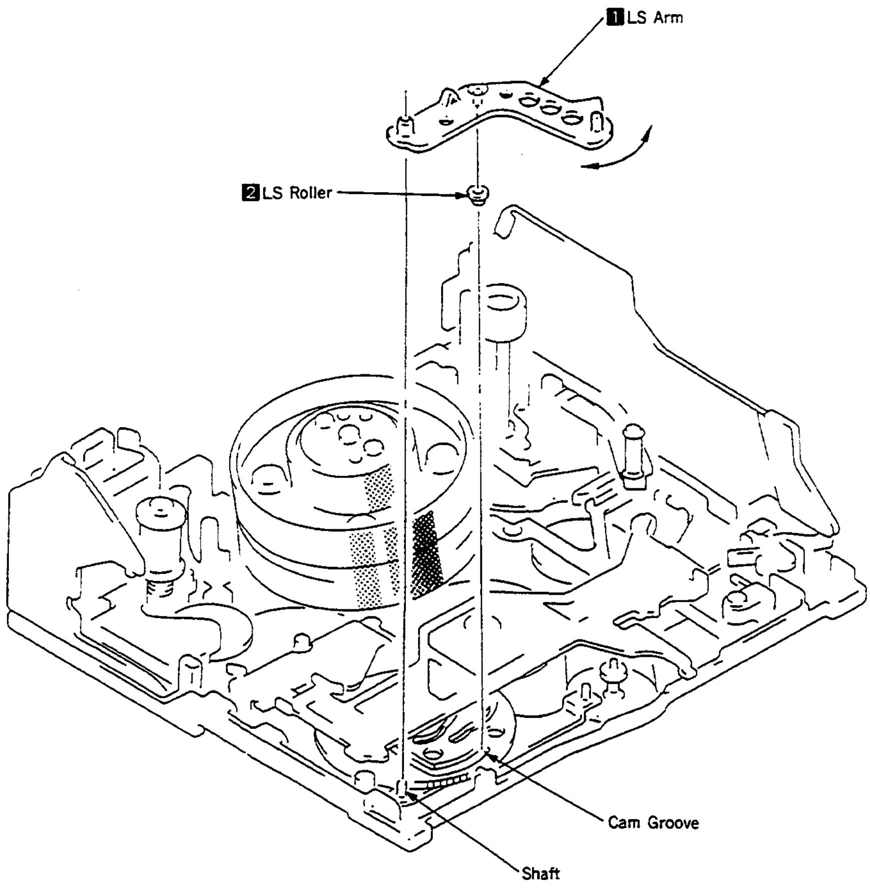


Fig. 22

## . M SLIDER ASSEMBLY (Fig. 23)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

### 2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

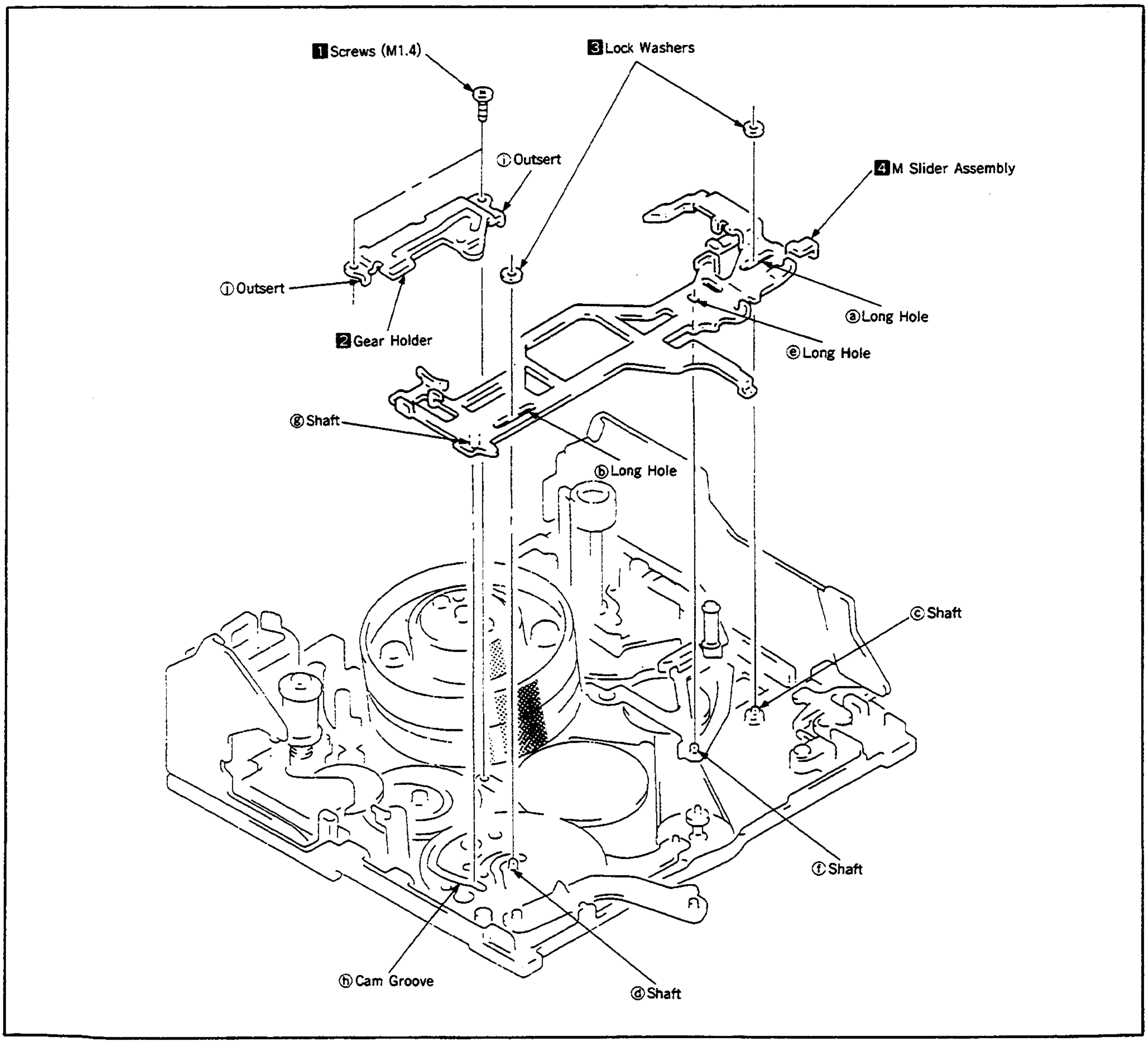

❶Screws (M1.4)
❸Lock Washers
ⓘOutsert
❹M Slider Assembly
ⓙOutsert
ⓐLong Hole
❷Gear Holder
ⓔLong Hole
ⓖShaft
ⓑLong Hole
ⓒShaft
ⓕShaft
ⓗCam Groove
ⓓShaft

Fig. 23

## 3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

### 2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

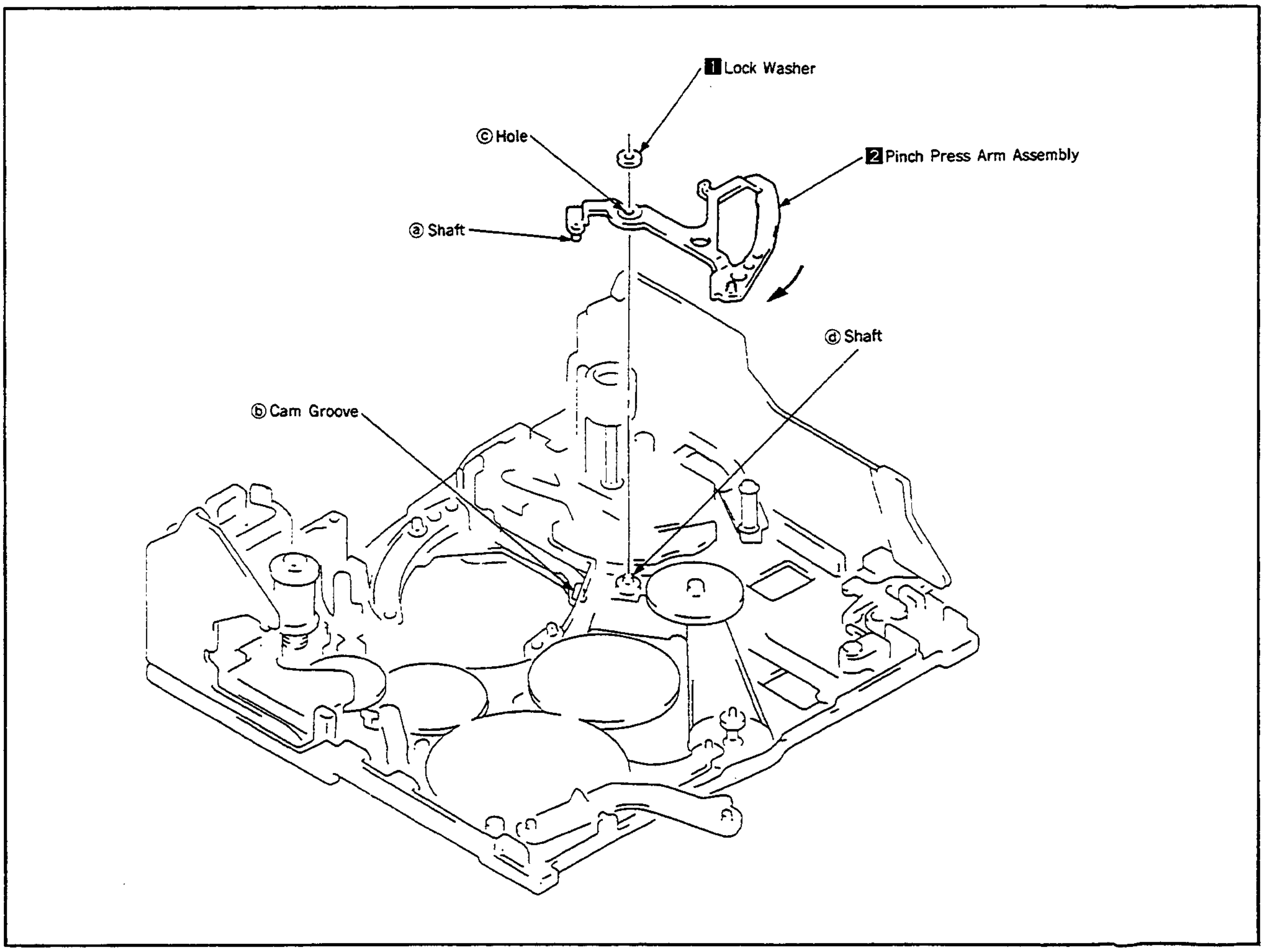


Fig. 24

## CAM (Fig. 25)

### Removal

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ❶.

### 2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

**Note :** Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ❶, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

**Note :** Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

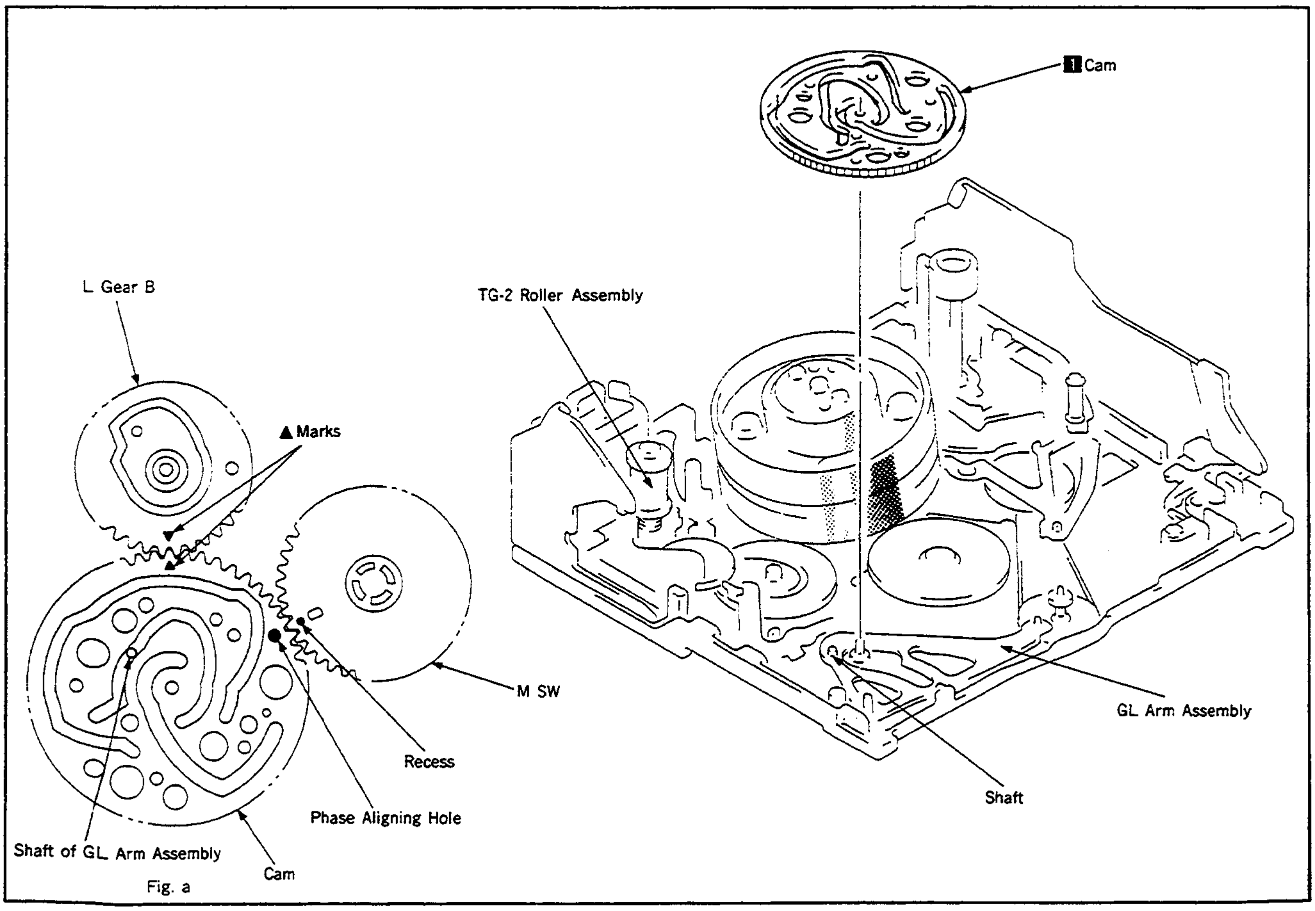


Fig. a

Fig. 25

### 3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly ❶.

2. Mounting

1) Mount the GL arm assembly ❶ with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

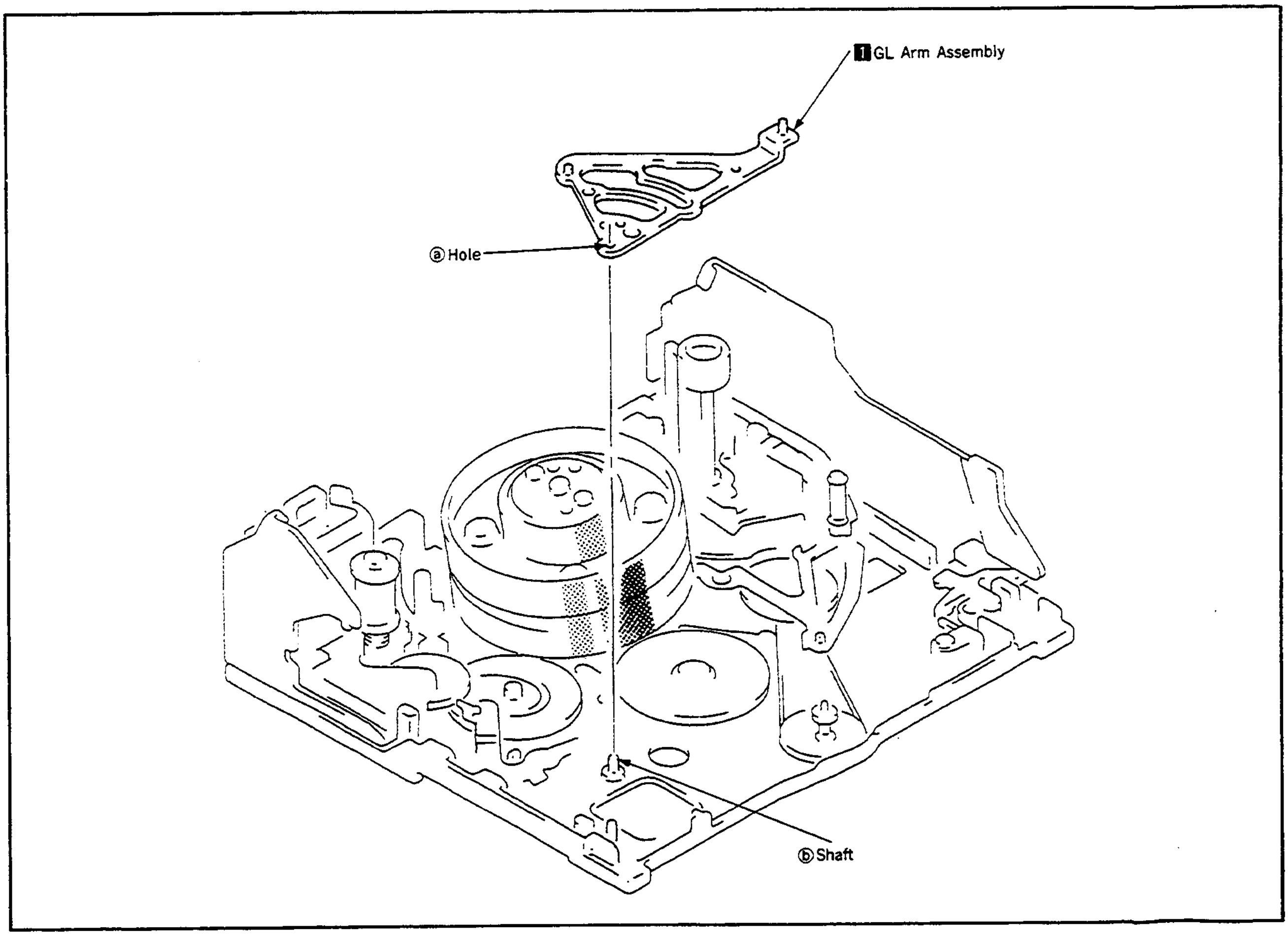


Fig. 26

## 9. L GEAR A AND L GEAR B (Fig. 27)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

### 2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

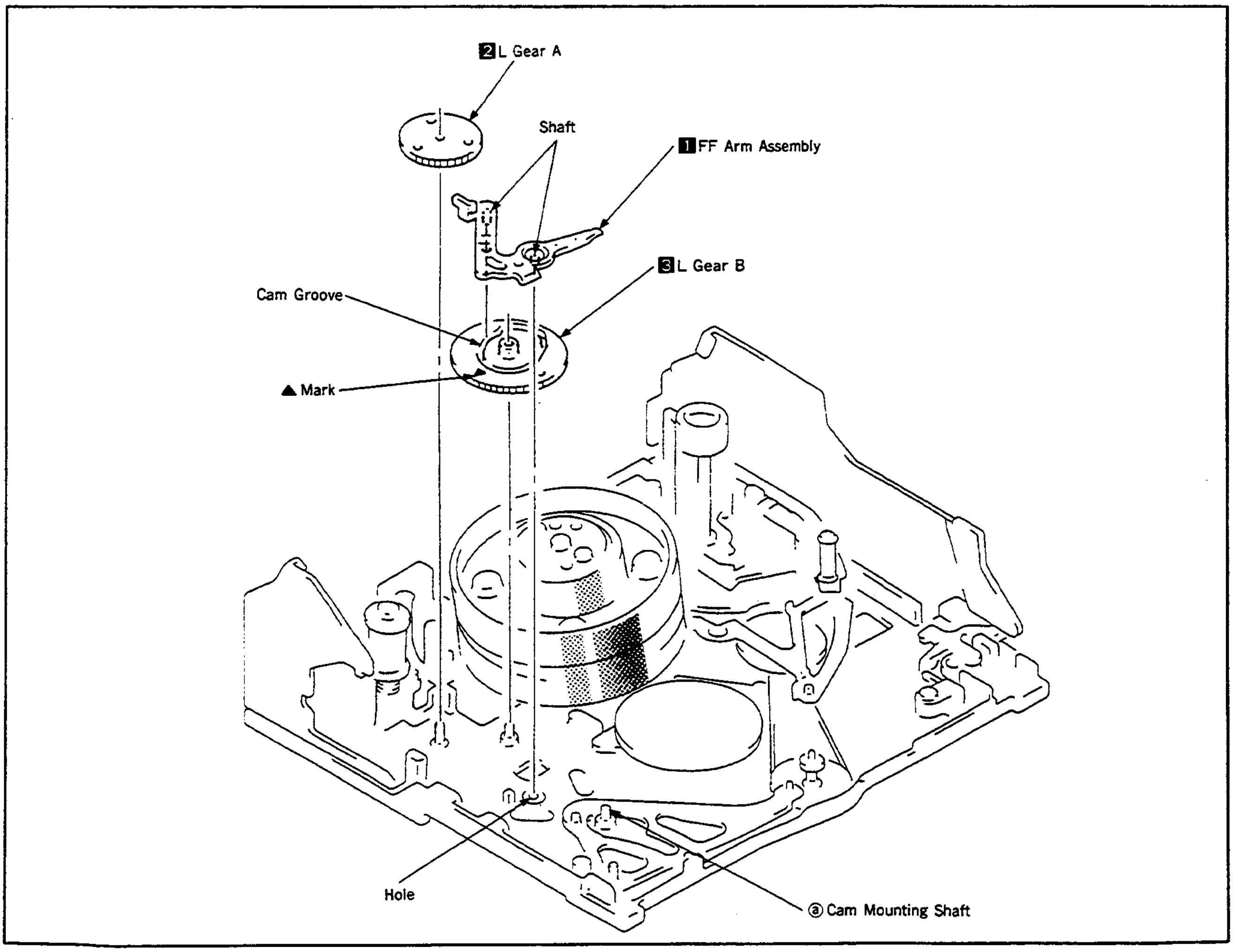


Fig. 27

## 3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer ❶, then remove together the Change gear assembly ❷, relay belt ❸ and relay pulley ❹.

### 2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt ❸ to the relay pulley ❹ and Change gear assembly ❷, mount respective parts.
   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

**Note** : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer ❶.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

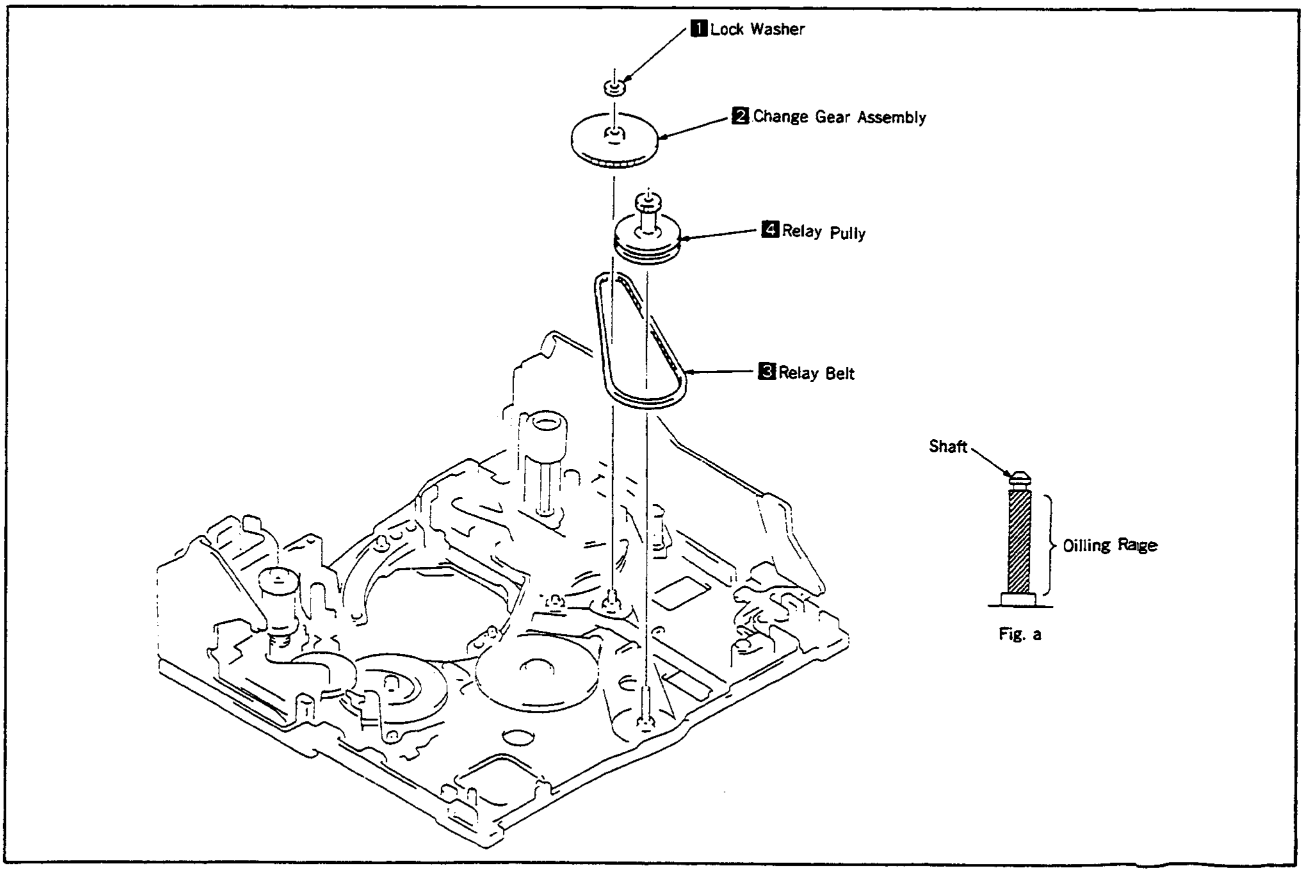


Fig. 28

## 3-21. ROTARY UPPER DRUM REPLACEMENT

### 1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws ❶ (Fig. 29).
2) Mount the jig ❷ (Ref. No. J-10) with the two supplied screws ❸, then screw the attached hexagon socket screws ❹ to the jig ❷. The rotary upper drum ❺ will move upward and come off (Fig. 30).

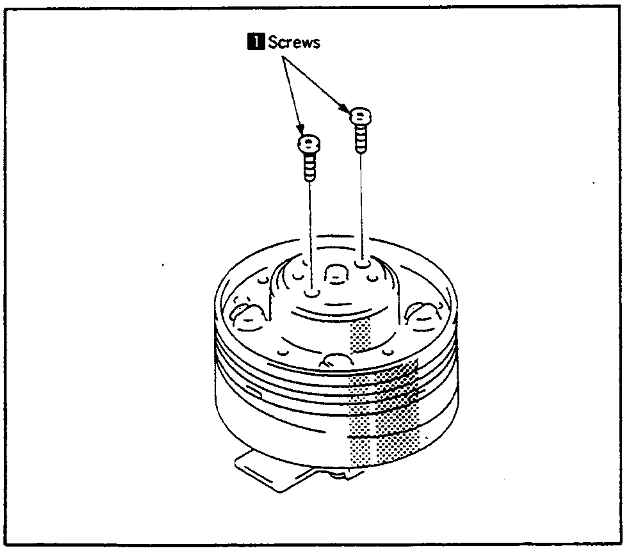


Fig. 29

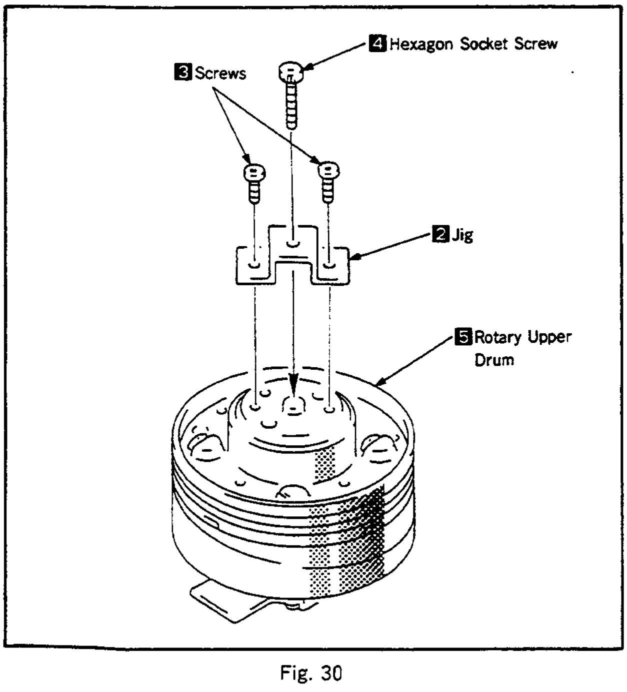


Fig. 30

### 2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❻ (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum ❺ by passing the jig through its positioning hole ❼. (Fig.31)
3) Remove the jig ❻ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws ❶ alternately (Fig.29).
4) Insert the jig ❻ into the positioning hole ❼ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.

**Note** : After installing, be sure to perform tape path adjustment as described in section 4.

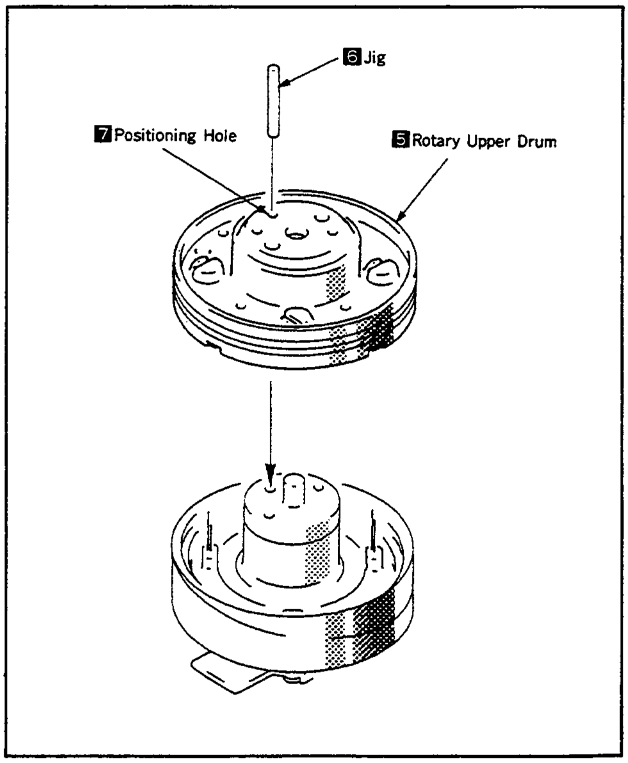


Fig. 31

## 3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

### 1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

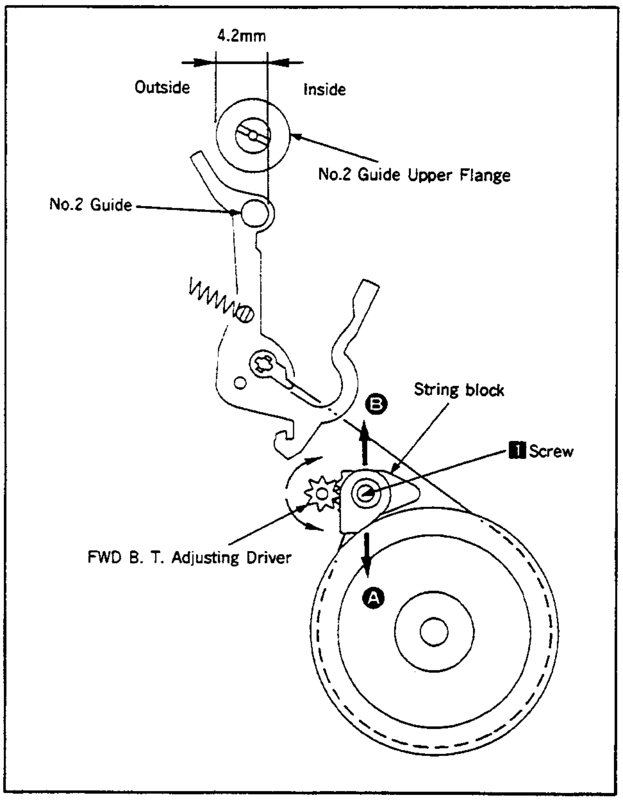

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
❶Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

## 3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

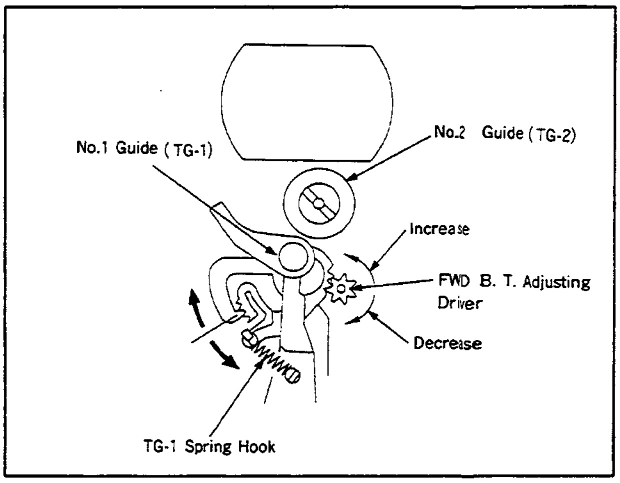

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

## 3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

## 4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

**Note** : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

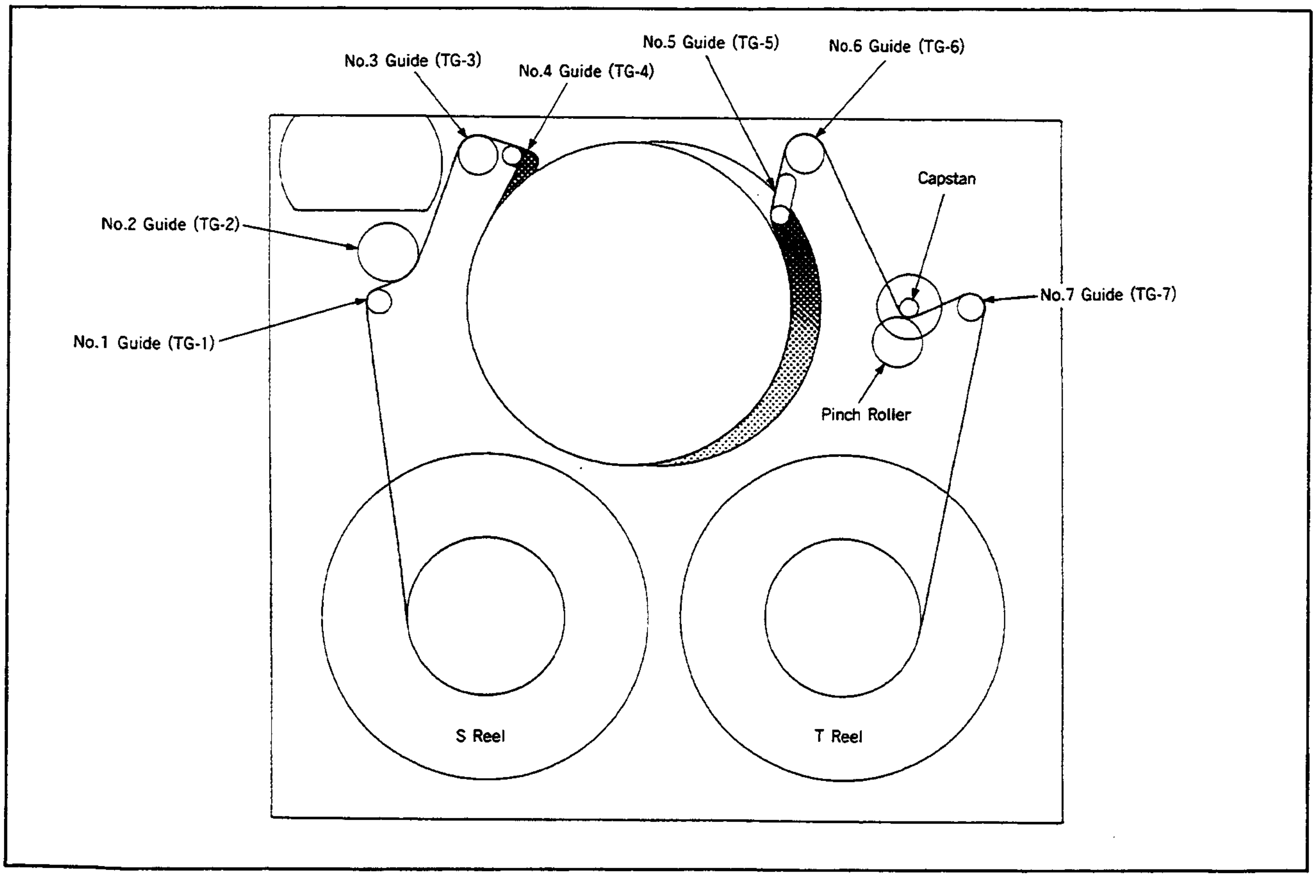


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

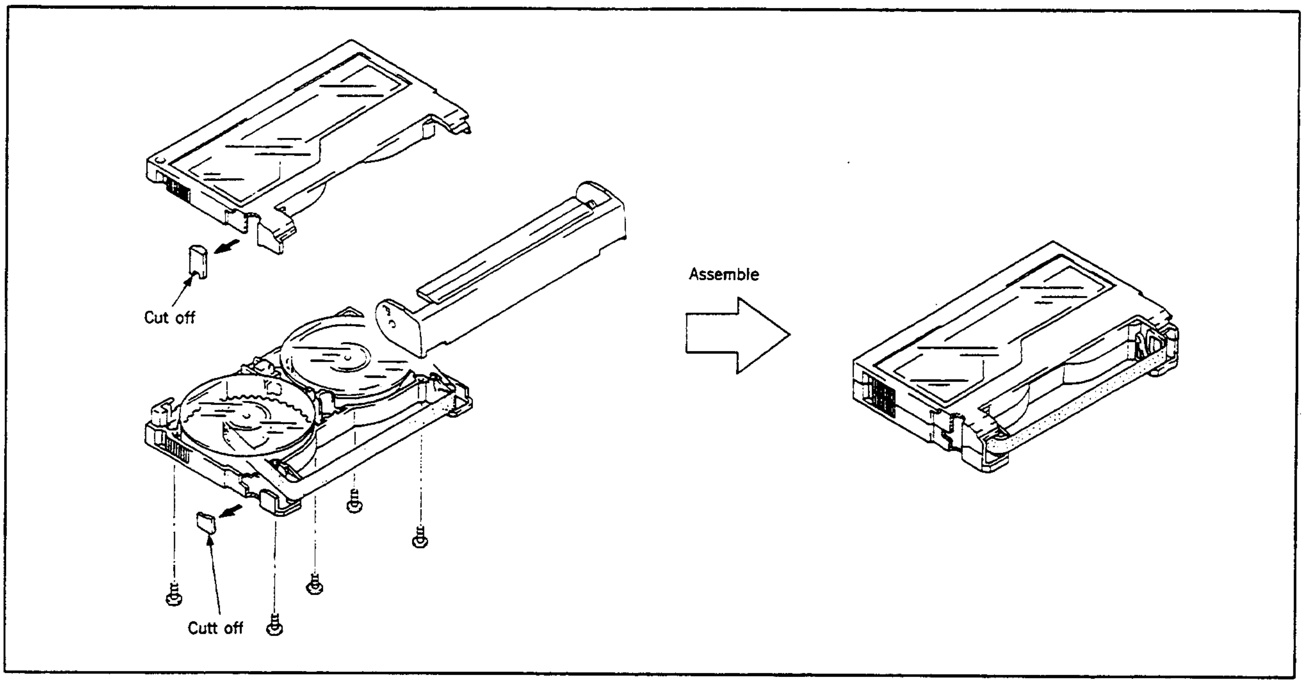


Fig. 34-B

## 4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
      CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
      CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

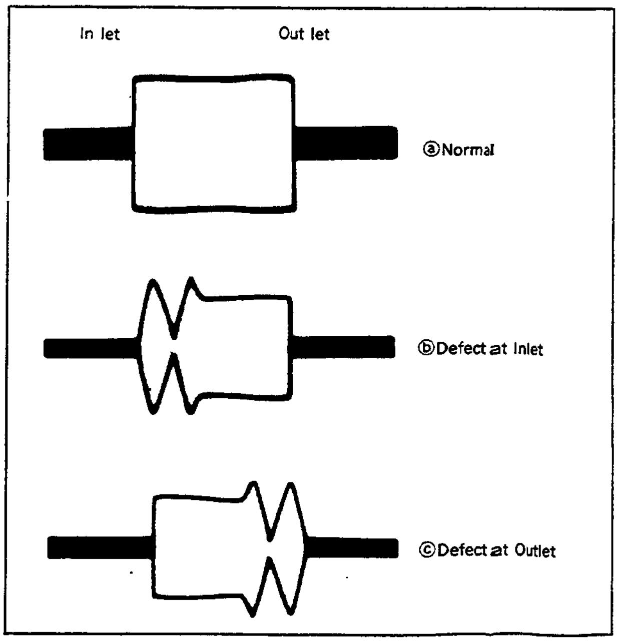


Fig. 35

## 4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

**Note** : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

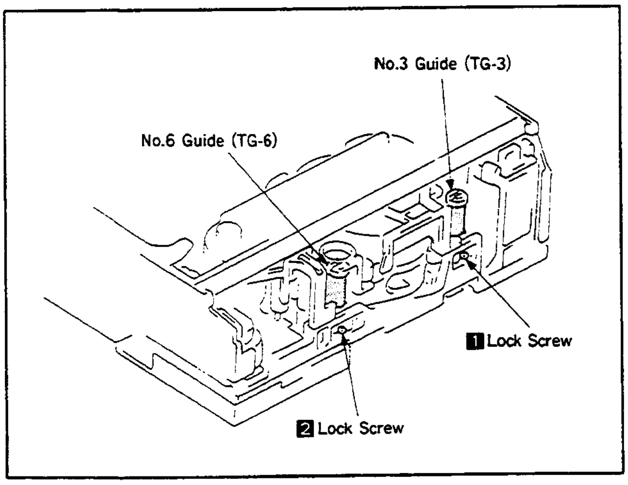


Fig. 36

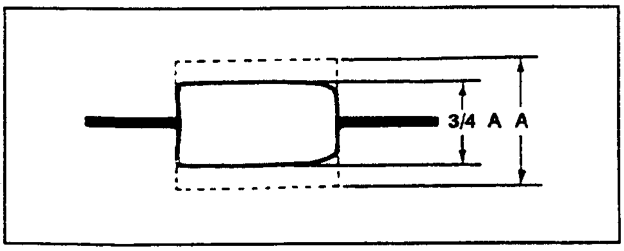


Fig. 37

## 4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

### 4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

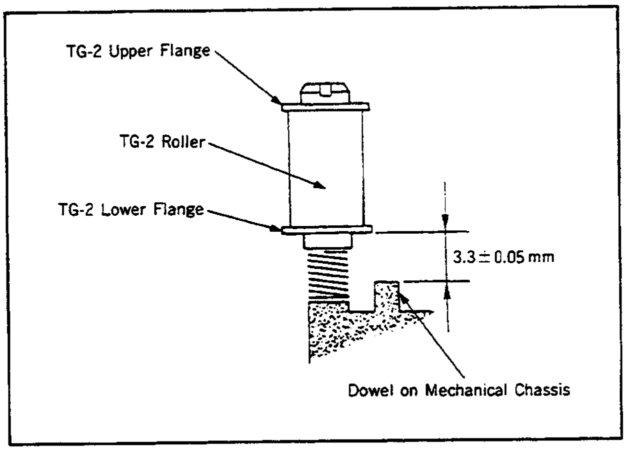


Fig. 38

**[Reference]**
**This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.**

| Guide | Guide adjustment | Rotating direction of adjustment screw |
|---|---|---|
| TG-2, 3, 6 | Raise | Counterclockwise |
| | Lower | Clockwise |
| TG-7 | Raise | Clockwise |
| | Lower | Counterclockwise |

### 4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

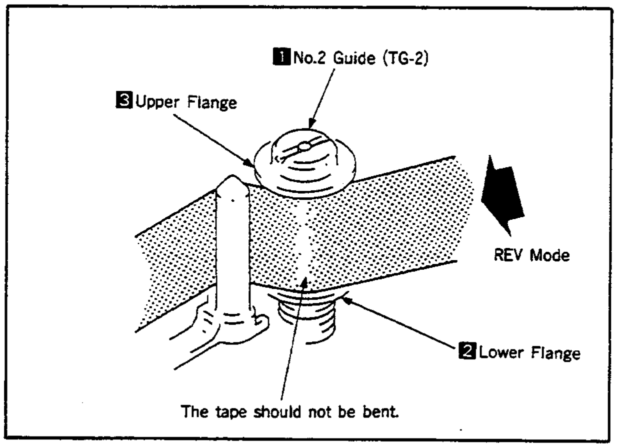


Fig. 39

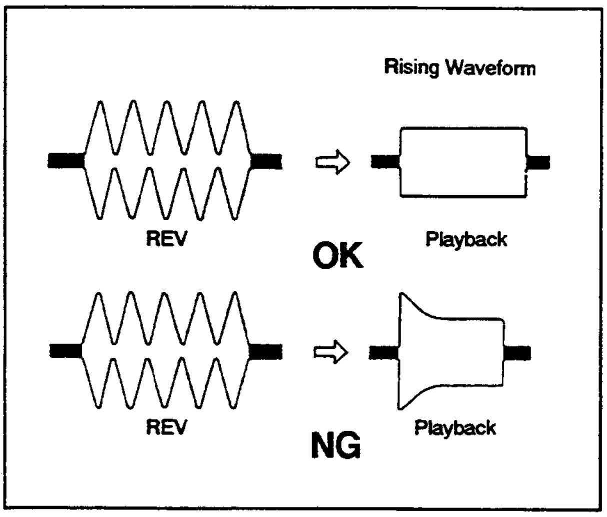


Fig. 40

### 4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

**Note** : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

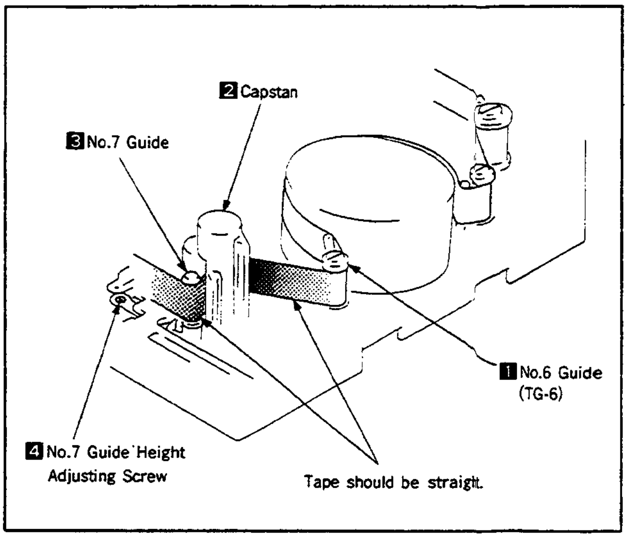


Fig. 41

### 4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

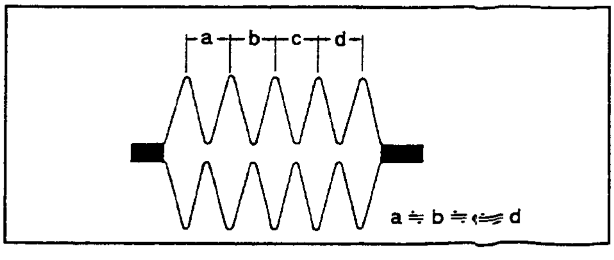


Fig. 42

## 4-6. CHECK AFTER ADJUSTMENT

### 4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

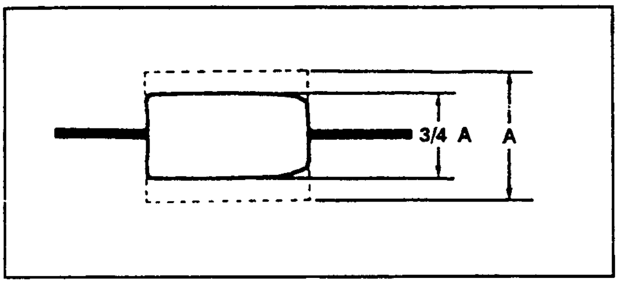


Fig. 43

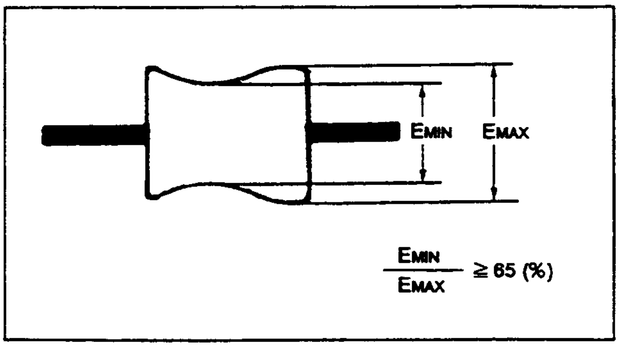

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

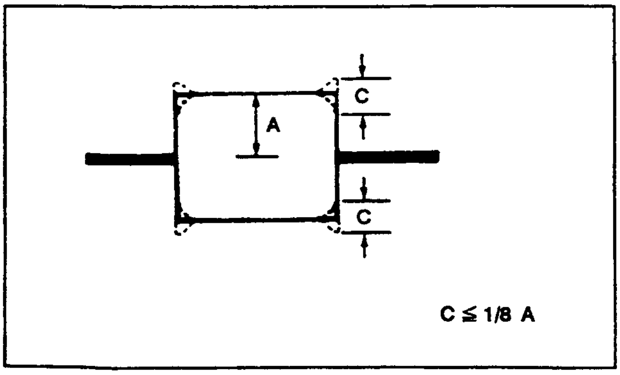


Fig. 45

### 4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

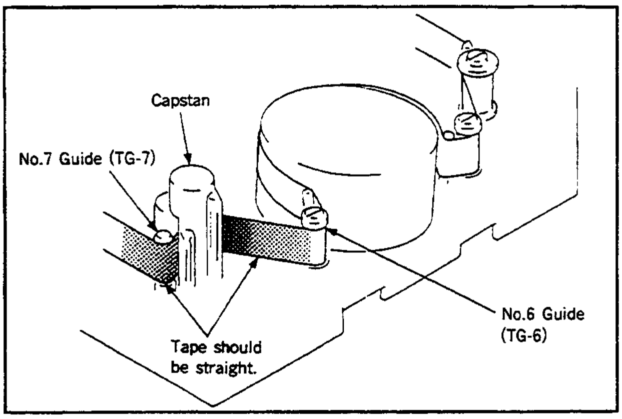

Capstan
No.7 Guide (TG-7)
Tape should be straight.
No.6 Guide (TG-6)

Fig. 46

### 4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

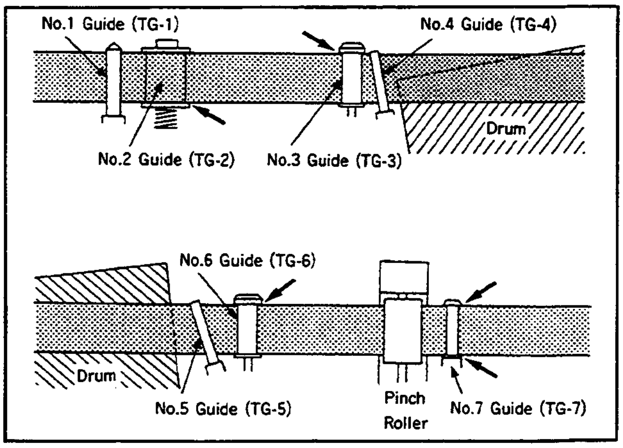

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

## A MECHANISM

## SUPPLIMENT-2

**Video 8**

### 〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

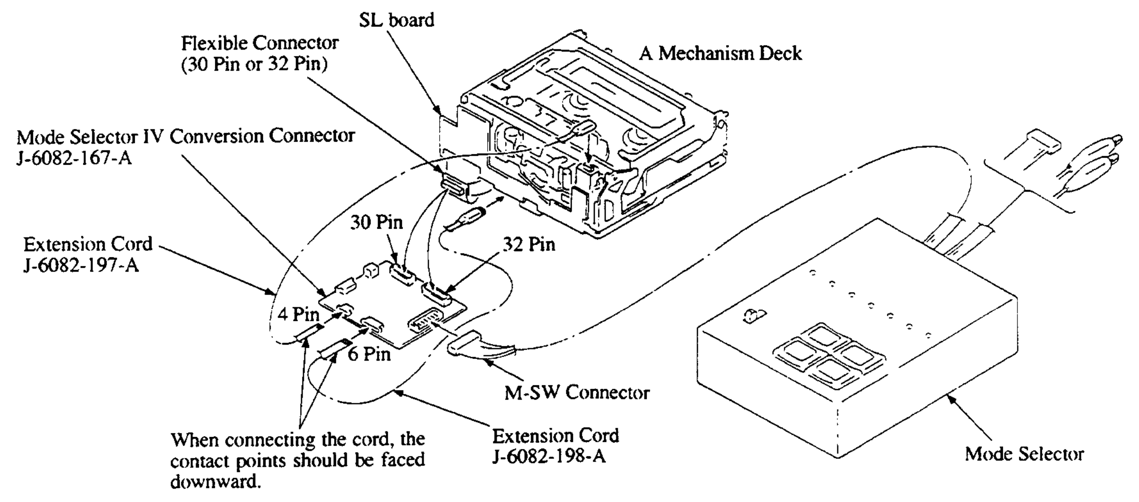
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
Extension Cord
J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord
J-6082-198-A
Mode Selector

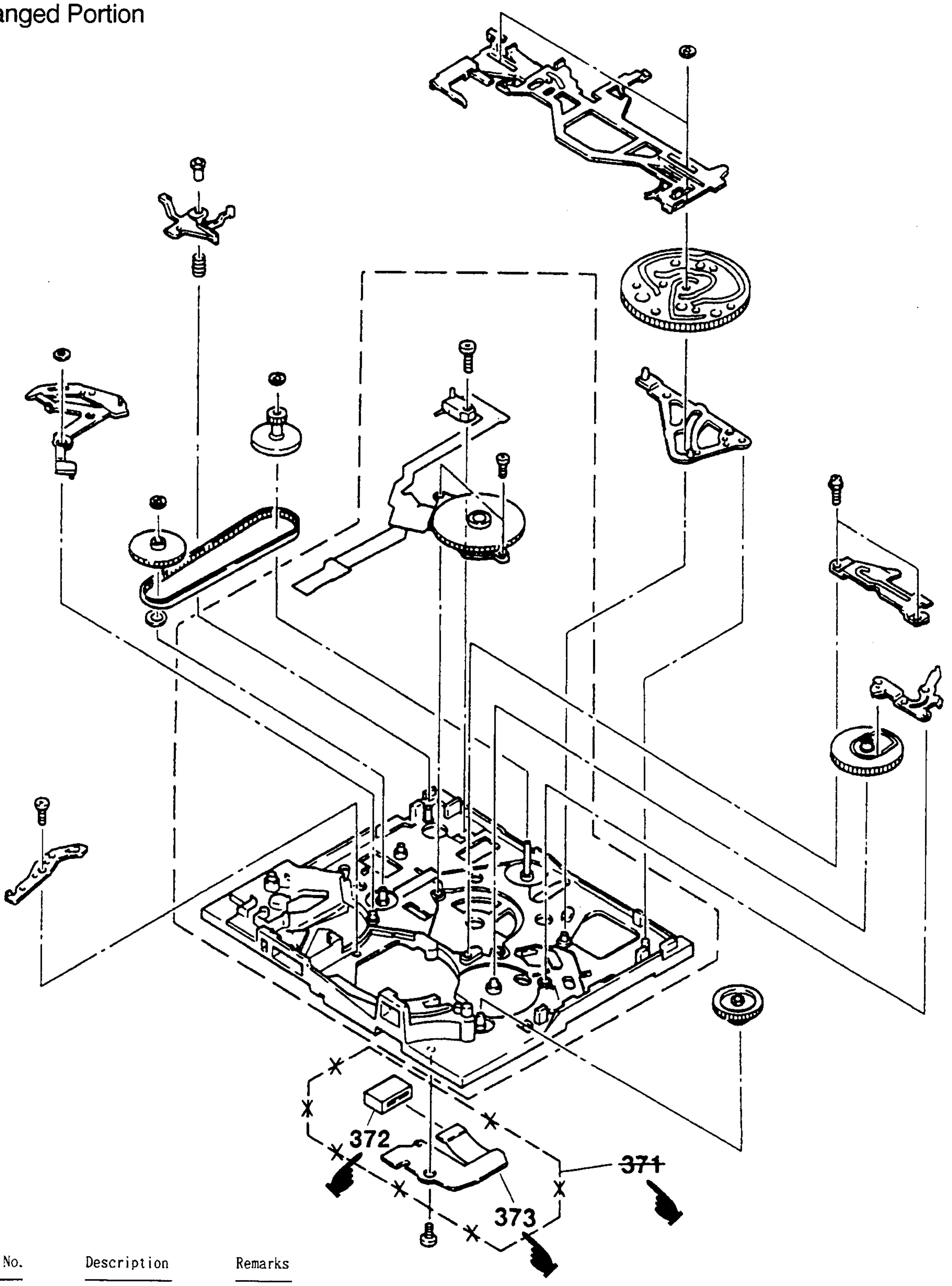
### 〈CORRECTION〉

P10. 2-4 Service jigs list

| | | Incorrect | | Correct |
|---|---|---|---|---|
| J-15 | FWD B.T adjusting driver | J-6082-182-A | ➜ | J-6082-187-A |

## MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



| Ref.No. | Part No. | Description | Remarks |
|---|---|---|---|
| ~~371~~ | ~~A-7040-311-A~~ | ~~FP-444 ASSY~~ | ☛ |
| 372 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | ☛ |
| 373 | 1-641-639-13 | FP-442 FLEXIBLE BOARD | ☛ |

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**Personal Video Group**

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# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

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